

**A STUDY OF THE MARKETABILITY OF
OVERLAID LUMBER PRODUCTS**

SEYMOUR KROLL & ASSOCIATES, INC.
Marketing Consultants - Construction Industry

UNITED STATES GOVERNMENT

Department of Agriculture—Forest Service

Memorandum

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200 West Prospect Street
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TO : Harold E. Worth, Project Leader

File No. 4700
4830

FROM : Lincoln A. Mueller, Project Leader

Date: August 13, 1968

SUBJECT: Forest Products Research (Paper overlay study) Your reference:
Forest Products Marketing Research

I have reviewed the July 18, 1968, draft of Seymour Kroll and Associates' report on "A Study of the Marketability of Overlaid Lumber Products." It is my judgment that the present draft has essentially overcome the objectional features our earlier reviews revealed and that it now meets the terms of our contract.

I am naturally disappointed that the findings did not disclose a more promising market for overlaid lumber products. I do, nevertheless, feel that the results do offer considerable guidance to the study and should also prove of value and interest to other segments of the forest products industry.

Lincoln A. Mueller

A STUDY OF THE MARKETABILITY
OF OVERLAID LUMBER PRODUCTS

Prepared For: U.S. Department of Agriculture
Forest Service
Rocky Mountain Forest & Range
Experiment Station
Fort Collins, Colorado

By: Seymour Kroll & Associates, Inc.
Chicago, Illinois

July, 1968
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STUDY OF THE MARKETABILITY OF OVERLAID LUMBER PRODUCTS

INTRODUCTION

Background

The Lumber Industry Has Been Plagued With the Problem of Marketing Lower Grades of Ponderosa Pine (#3 Common and Lower) at Prices Below Manufacturing Costs

Ponderosa pine trees in many areas of the West are fairly small, contain many knots and other defects. Lumber cut from these trees includes a high proportion of the lower grades. In the Southwest, for example, about 65% of the lumber is #3 Common and lower grades. Formerly, the lower grades of boards were used for sheathing in construction projects. In recent years, however, plywood has largely replaced boards for this end use. As a result, the demand for lower-grade boards has been declining, but lumber production costs have been increasing. It is estimated that producers lose \$15 to \$25 per thousand board feet of lumber in the #4 and #5 Common grades.

Research by Rocky Mountain Forest and Range Experiment Station, U.S. Forest Service, is pilot testing a method of covering lower-grade board with fiberfilm that masks "sound," visible defects and improves surface characteristics.

This study is part of an overall research project on the feasibility of roll-laminating overlays on lower-grade ponderosa pine lumber. The Government is conducting a series of technical tests and pilot-plant tests of various combinations of lumber grades, glues and overlay materials of products. The results and recommendations of this study will be considered when designing and conducting the later stages of the Government's pilot-plant tests and product-performance tests.

Subsequent to the screening study, to be conducted by Seymour Kroll & Associates, Inc. (SK&A), the Government's program would include undertaking further technical development and testing of the products that appear to be attractive: Technical specifications and performance limitations for each of the products must be established for each of the end-use markets.

The next step would be to conduct a number of installations to determine how well the products perform under actual field conditions.

After these steps have been taken and the test results indicate that the products can perform properly, then a second and more comprehensive market study would be undertaken to determine if the product would be accepted in regions of the Country other than those covered during the screening study. In addition, markets not covered by the first study would be investigated (i.e., industrial and commercial markets).

The First Step in the Market Study Was Designed to Screen Overlaid Lumber Products That Appeared at the Outset to Have the Greatest Opportunity for Success

In Step #1 of this study, seven products were selected for inclusion in the screening study. Those seven are:

Siding
Fascia
Shelving
Molding and Trim
Jambs
Lumber Paneling
Outdoor Stadium Seats

These products were originally selected from a list of twenty suggested by Industry and Government sources. A review committee, consisting of SK&A personnel and representatives from the Forest Service *✓ industry* selected seven of these products because it was believed they would meet most of the following criteria.

- A substrate of low-grade ponderosa pine would be suitable for the product.
- Market potential would be large enough to interest many mills in making the product.
- The product would be marketable through retail lumber dealers without intermediate manufacturers. (One exception was made to this criteria--outdoor stadium seating.)
- The prices of the present competitive materials were high enough to allow manufacturers to spend money processing the low-grade ponderosa pine and still be able to compete.

There Are Important Limitations to This Screening Study

Because of the nature of this Screening Study and the criteria that were established, the conclusions reached do not necessarily apply to overlaid lumber products using species other than ponderosa pine, or to those having potential industrial uses (i.e., the industrial market for shelving).

In addition, while the conclusions from this study may indicate that there is not a sufficient market potential for any one product to interest many mills, the potential may still be attractive to an individual company.

It is also important to note that a screening study is not an extensive, nor an intensive, market investigation. As the name implies (a screening study), it is designed to explore the market on a limited basis in order to determine whether or not there is sufficient market receptivity for the new product to warrant the expenditure of the additional time and money needed to further develop the product, and for a more extensive study of the market.

Therefore, in a screening study the findings are not necessarily projectable to all regions of the Country. However, the findings are normally indicative of what might be found if a more thorough market investigation were to be undertaken.

The minimum marketing requirements (guidelines) presented in this report are subject to the same limitations. The requirements should be used primarily as guidelines for a manufacturer considering marketing any

of the proposed new products. The final marketing requirement cannot be developed until a more extensive study is undertaken; and consideration must also be given to the marketing methods being used by the mill proposing to manufacture the new product.

Study Plan

Subsequent to Selecting Seven Products, a Two-Step Approach Was Designed

The first step was to examine more fully the basic rationale used in selecting the products. After closer scrutiny, if any of the seven products did not meet required end-use specifications or represent adequate potential they were dropped from the study. As a result, Steps #3 and #4, the final phases of the screening study, focused on three products: siding, molding and trim, and shelving.

In Designing the Screening Study, Several Basic Criteria Were Established

1 - The product concept involved utilization of low-grade ponderosa pine as a substrate. This concept has three major implications:

- . Economic advantage in the marketplace
- . Low-grade material as a substrate can meet performance requirements
- . Product advantages (features) inherent in the use of a smooth-faced overlay.

- 2 - The potential for an acceptable product must be large enough to interest many mills. In essence then, "national" markets rather than limited regional applications were being sought. It is recognized that several specific end-use markets could be identified which might be of interest to one or two aggressive mills, but SK&A was directed to adopt a much broader viewpoint.
- 3 - The investigation has been restricted to the retail lumber dealer market serviced directly by mills without intermediate manufacturing. One industrial product was included--outdoor stadium seats.

In Pursuit of the Specific Objectives, the Study Was Designed to Draw on Several Sources of Information

The objectives of Step #3 of the Study were to:

- Make a preliminary determination of the most important competitive products.
- Make a preliminary estimate of the market potential.
- Develop a preliminary statement for each of the product groups of the probable end-use requirements that must be met if the product is to be marketed successfully.

The primary objectives of Step #4 were to:

- Develop a profile of the product specifications required to compete in the market.
- Describe and analyze competition from other products--including pricing.

- Analyze channels of distribution for the products under study and recommend a strategy for penetrating the market.
- Recommend priorities among the products studied for possible installation and applications tests which the Government may conduct separately and at a later date.

Builders and retail lumber dealers in Chicago, Dallas and Los Angeles were called upon and shown several samples of the product concepts. In virtually all cases, the builders were large, in that they normally erect 50 or more homes annually. The selection of retail lumber dealers was also based on size (sales volume exceeded \$300,000). All builders and dealers were selected judgementally, based on size, characteristics of operation and type of building activity.

The three cities were selected for a number of reasons:

1. Dallas is close to the pilot-plant operation.
2. Historically, Los Angeles is more receptive to new products.
3. Chicago and Dallas are fairly representative of the Midwest and Southern markets.

In the process of gathering information, calls were made on building materials manufacturers, ponderosa pine mills, architects, trade associations, universities and public schools. These interviews, along with

DEFINITIONS FOR BASIC RATING SCALES

Scale of Importance of Standard Criteria for Builder Evaluation of Product

Very Important:

In the opinion of the builders, the product must perform this function for it to be considered for this end use.

Important:

While not quite as important as a function falling into the above classification, it is doubtful that most builders would consider using the product if it did not perform satisfactorily.

Marginal Importance:

For some of the builders, this function may be important; however, most builders do not consider it to be an important factor in their decision-making process.

Not Important:

For all practical purposes, any function with this rating does not play a role in the builders purchasing decision.

Scale of Comparative Evaluation--the Overlaid Products Versus Existing Competitive Products

<u>Symbol</u>	<u>Definition</u>
+	Indicates a product advantage for the overlaid
-	Indicates a product weakness for the overlaid
=	Indicates that the overlaid is considered on par with competitive products now being used
?	Indicates that the trade could not reach a conclusion because of the lack of technical information about the overlaid

extensive secondary data, were used to relate limited local findings to a broader national perspective. A list of the number of interviews that were completed is shown below.

Lumber Dealers	63
Single-Family Home Builders	61
Garden-Apartment Builders	30
Manufacturers	8
Stadium-Seating Manufacturers	8
Other Trade Factors	<u>8</u>
Total	178

All interviews were conducted by SK&A staff members. Interviews were of a qualitative nature and the fieldwork was conducted at various intervals over a period of time extending from December 1967 to April 1968.

Evaluating the New Products Was Done in Two Steps

In evaluating the proposed overlaid products, the first step was to determine the end-use requirements that must be met by each product. To do this, it was necessary to determine what functions or requirements the builder expects the product to meet and then to classify each of them on the basis of importance in the builder's purchase decision.

End-use requirements were, therefore, identified as being "Very Important," "Important," of "Marginal Importance" or "Not Important" to the builder. (See definitions opposite.)

In order to rate the function, it was necessary to conduct in-depth interviews with builders to understand how they evaluated the product. (See Exhibit XII in the Appendix which lists the many subjects covered with the builders and dealers.) Because the builders are buying and using the products so frequently, they generally buy on the basis of habit. Therefore, it was necessary to carefully analyze what the builders said and then apply the rating for them, rather than simply have the builders rate the function or requirements themselves.

Once the end-use requirements or functions of the products were established, the next step was to have the builder and dealer evaluate each overlaid product. They did this on the basis of how well they thought the product would meet each of the requirements in comparison with the competitive products presently used. If it was determined that the product was superior to existing products, then the overlaid product was given a plus (+) rating. On the other hand, if existing products performed more satisfactorily than the overlaid, it was given a minus (-) rating. When the overlaid product's performance was considered to be on a par with that of competitive products, it was given an equal (=) rating.

Finally, when it was not possible to rate a product on a given requirement because of insufficient technical information, a question (?) rating was used.

SK&A's Experience Was Important in the Development of the Marketing Guidelines

The analysis of marketing requirements relies largely on SK&A's experience in the construction industry. Every effort was made to check the soundness of the recommended marketing requirements with trade factors and building materials manufacturers, but experience and creative judgment were the final determinants.

SK&A is well qualified for this task because of its extensive experience in the construction industry. It is a marketing consulting firm specializing in solving marketing problems for the construction industry. Over 140 assignments have been completed since SK&A's inception in 1962 and the majority of them have involved the evaluation of new or existing building products, of which more than one-third were in the new residential construction market. Also the Company has completed more than 17 market studies involving forest products including:

- Vinyl overlaid lumber shelving
- Vinyl overlaid lumber bi-fold doors
- Vinyl overlaid wood windows
- Prefinished lumber paneling
- Wood decking
- Laminated studs
- Splined sheet deck
- Laminated beams
- Western Pine lumber

- Medium- and high-density overlaid plywood
- Hemlock - Maple plywood
- Decorative hardwood plywood

Many of SK&A's assignments have included the development of marketing plans for building products, including prefinished lumber paneling and prefinished hardwood plywood.

This Report Is Presented in Four Sections

Section I reviews siding; Section II discusses molding and trim; Section III deals with shelving.

In each of these three sections the material is presented in three major categories: A description of the market in general; an evaluation of the proposed product; and a discussion of marketing guidelines.

Section IV presents a review of findings on the four products which were included in the initial Screening Study but were later dropped. These four products are fascia, jambs, lumber paneling and outdoor stadium seats.

CONCLUSIONS AND RECOMMENDATIONS

During the course of this Screening Study, seven products were reviewed. After the first phase of the assignment, it was mutually agreed that further investigation of four products (fascia, interior decorated paneling, jambs, and outdoor stadium seats) was not warranted because they did not meet the criteria established by the Review Committee (see page *iii*). Section IV of this report contains a review of the findings covering each of these products.

A complete screening study was carried out for the remaining three products--siding, molding and trim, and shelving. Based on the findings, it is recommended that the Rocky Mountain Station conduct further research on siding and molding and trim. It would appear that work on shelving should be terminated at this time.

Research on Siding Should Be Continued

The market opportunities for siding are favorable if the product can meet the market's performance requirements and can be priced competitively with hardboard.

To ascertain whether or not the overlaid siding can perform properly, the Rocky Mountain Station should undertake the necessary tests to determine if:

- The product will rot, twist or check
- The overlay will delaminate or tear when cut
- The joints will buckle due to moisture absorption

- The siding can be properly nailed and cut (In the process, the material should not split or reveal the defects in the core.)
- The siding will break or split in the process of handling
- The product will warp if the overlay is laminated only to the face
- A white (or off-white) overlay could be used instead of the present color
- The overlaid siding can be installed in the same manner as lumber siding.

Finally, it is essential to conduct an economic feasibility study to determine if a mill could manufacture and sell the overlaid siding at a price competitive with primed hardboard siding.

A more detailed discussion of why each of the tests described above is warranted is included in the Product Performance Requirements of Section I.

After these tests have been completed, the Forest Service should conduct a number of test installations to determine if the overlaid siding will meet the performance requirements under actual field conditions. These tests should also provide data on the speed and ease of the installation of the product.

Further Research on Molding and Trim Is Warranted

The tests should determine if:

- The surface defects (including grain raising) in the lumber core will telegraph through the overlay

- The molding will split or break in the process of handling
- The nails can be properly countersunk and then filled
- The fillers currently used are compatible with the overlay
- The overlay will delaminate or tear when the molding is cut
- The molding will be as resistant to damage (abrasion, impact, water) as is clear or finger-jointed lumber
- The molding can be as readily repaired if damaged as can clear or finger-jointed lumber
- The overlay will resist chemicals (i.e., paint removers) and scraping if required to remove existing paint
- A white (or off-white) overlay can be used instead of the present color.

Finally, an economic feasibility study should be undertaken to determine if a mill could manufacture and sell overlaid molding priced at about 5% below clear ponderosa pine.

The Rocky Mountain Station should also consider the economics of manufacturing a grain-printed molding. If feasible, a screening study of this market segment should be undertaken.

After the above tests are completed, arrangements should be made for field installations. These tests should be designed to determine how well the product meets the performance requirements.

Research on Shelving Should Be Terminated

The market potential for shelving is too small to attract many mills. In addition, it is anticipated that a mill could not manufacture the overlaid shelving economically enough to be sold at a price competitive with #2 Common ponderosa pine. The trade appears quite satisfied with the lumber shelving currently being used and therefore does not see any reason to pay a premium for the overlaid product, even though its superior appearance is recognized.

What complicates the pricing problem is that the trade considers the overlaid shelving to be a specialty product and would, therefore, be sold through stocking distributors. For this reason, an additional middleman (and markup) would be involved. For the overlaid shelving to compete at the builder level, the mill price would have to be 15% to 25% below the mill price for #2 Common ponderosa pine.

If, however, the Forest Service wants to conduct further tests, these should be designed to determine if:

- The overlaid shelving would warp less than #2 Common ponderosa pine (Particular attention should be given to wide widths)
- The overlaid product is at least as strong as #2 Common ponderosa pine
- The shelving can be cut and nailed without splintering
- The surface defects in the core will not telegraph through the overlay

- It is economical to laminate the overlay in wide widths to compete with plywood shelving
- It is economical to prime the underside with or without the overlay
- The overlay on one side only will cause the shelving to warp after installation
- A prime coat on the underside of the shelving will satisfactorily hide the surface defects
- The overlay can be readily obtained.

It is recommended that the Rocky Mountain Station undertake a screening study of the industrial market for shelving--but only if it is determined that the overlaid product can perform as well as metal shelving.

In conclusion, SK&A wishes to thank Dr. Duane Lloyd, and Messrs. David E. Herrick, Robert E. Benson and Lincoln A. Mueller of the Forest Service for their cooperation in carrying out this Study.

SECTION I

MARKET PROFILE FOR OVERLAID PONDEROSA PINE SIDING

1. Description of Market
2. Evaluation of Overlaid
Ponderosa Pine Siding
3. Marketing Guidelines

This section presents a summary of the major factors which have a considerable bearing on the market opportunities for overlaid ponderosa pine siding.

SECTION I

MARKET PROFILE FOR OVERLAID PONDEROSA PINE SIDING

1 - DESCRIPTION OF THE MARKET

1.1 Product Description

Brick and Hardboard Siding Account for a Major Proportion of the Total New, Single-Family, Residential Facing Market

- It is estimated that two materials, brick and hardboard, represent more than 50% of all residential facing materials used in new single-family construction.*
- Share of total facing market, by type of material, is estimated to be as follows:*

<u>Material</u>	<u>% of Total Facing Volume</u>
Brick	25-35%
Hardboard (Fiberboard)	20-25
Aluminum	10-15
Lumber	8-12
Wood Shakes	5-10
Stucco	5-10
Plywood	5-10
Other	5-10

**This SK&A estimate is based on a combination of several sources. The basic sources are as follows:*

*BENSON, ROBERT E.: Intermountain Forest and Range Experiment Station
(unpublished research paper on factors that affect
outlook for lumber siding, 1968.)*

Practical Builder: "1963 Census of Builder Activity"

Confidential source material: "Usage in New Single-Family Homes, 1961"

EXHIBIT I

TYPES OF FACING MATERIALS BEING USED BY GEOGRAPHICAL REGION IN 1963

<u>Type of Siding</u>	<u>% of Single-Family Homes By Region</u>				
	<u>N.E.</u>	<u>N.C.</u>	<u>S.</u>	<u>W.</u>	<u>Total U.S.</u>
Brick	31%	23%	38%	16%	27%
Wood (beveled)	12	21	11	23	17
Hardboard (fiberboard)	9	19	7	15	12
Aluminum	14	14	7	7	11
Wood shingles/shakes	16	7	2	4	8
Asbestos shingles	7	5	8	10	8
Stucco	6	-	6	16	7
Concrete block	1	2	16	4	5
Stone	3	3	-	-	2
Plywood	2	2	3	3	2
Other	-	4	1	-	1
Total	100%	100%	100%	100%	100%

Source: Confidential Source

- The usage pattern of the various facing materials changes considerably by geographical region. (Exhibit I)
 - . Brick is most popular in the South (38%) and Northeast (31%).
 - . Hardboard (fiberboard) is more prevalent in the Northwest (19%) and West (15%).
 - . Stucco is well entrenched in the West (16%).

Certain Facing Materials Enjoy a Unique Market Acceptance and Are Confronted With Little Competition From New Products

- Brick, stucco and wood shingles have a competitive advantage because of either aesthetics, prestige, low maintenance or low installed cost.
- Rough-sawn redwood and cedar fall into this classification because of the particular aesthetic appeal of these materials.
 - . To some extent, natural-finished sidings would also be included in this category of "unique market appeal."

Siding Is Sold Unfinished, Primed and Prefinished

- Primed and unfinished sidings presently have greater builder acceptance.
 - . Builders report that primed siding reduces job-site painting costs and still allows the builder to paint the house in any color the homeowner desires.
 - . To date, prefinished sidings lack broad acceptance in spite of labor-saving features because of high cost, installation complications, limited color selection and the need for a complete low-maintenance exterior system (i.e., fascia, soffits, etc.).
 - . Another advantage of primed siding is that it ensures that the painter cannot cheat on the quality of the primer he might use if he puts on both the primer and final coat.
 - . The major advantage of unfinished siding is that it can be stained instead of painted.

- Aluminum, vinyl, hardboard, lumber and plywood are all available in a prefinished state.
 - . An estimated 15% of hardboard siding is prefinished.
 - . Most lumber is sold unfinished and that which is prefinished is generally pre-stained.

There Are Two Types of Siding Designs--Horizontal and Vertical

- Horizontal siding refers to conventional lapboard siding.
 - . This type is dominant in terms of industry volume--excluding brick and stucco facing.
- Vertical siding is panels or boards used most often to achieve a desired aesthetic contrast or accent.
 - . This siding is commonly applied in large (4'x 8') panels or with board and batten construction.
 - . Vertical siding presently accounts for a relatively small percentage (possibly 10%) of the total facing market but appears to be gaining strength.
- Horizontal and vertical sidings are used to achieve distinctly different effects.
 - . Architectural integrity normally requires horizontal siding on colonial homes and traditional, two-story structures.
 - . Vertical siding is used to provide a contrast and to add visual appeal--particularly to a ranch-type house.
- For these reasons, one does not truly compete with the other.
 - . Some exception must be made for board and batten and the occasional use of horizontal siding in a vertical position, but these represent a very small percentage of the total vertical siding market.

EXHIBIT II

TYPES OF HARDBOARD AND LUMBER SIDING COMPETING WITH OVERLAID PONDEROSA PINE

<u>Material/ Patterns</u>	<u>Sizes</u>			<u>Grades</u>
	<u>Thickness</u>	<u>Width</u>	<u>Length</u>	
<u>Lumber</u>				
Bevel	1/2"; 5/8"; 3/4"; 1"	4"; 6"; 8"; 10"	R/L*--3' to 16'	B & Btr and C (All Heart); A and B (Supreme & Choice)
Shiplap (drop siding)	1/2"; 3/4"; 1"	4"; 6"; 8"; 10"	R/L*--3' to 16'	#1 & 2 Common; C & Btr and D
Dolly Varden	1/2"; 5/8"; 3/4"; 1"	6"; 8"; 10"	R/L*--3' to 16'	B & Btr and C (Supreme & Choice)
Board (Clapboard)	1"	4"; 6"; 8"; 10"; 12"	R/L*--3' to 16'	#1 & 2 Common
<u>Hardboard</u>				
Board (Lap)	3/8"; 7/16"	6"; 8"; 9"; 12"	12' and 16'	

*Random Lengths

Source: SK&A 1968.

Overlaid Ponderosa Pine Siding Will Compete Directly With Only a Portion of the Total Facing Market

- Because facing products are bought for various end uses, a single siding product cannot effectively compete for ALL segments of the market.
 - . The overlaid ponderosa pine market potential must be viewed in terms of TRUE potential versus total potential.
- The TRUE potential for the overlaid product would exclude the following:
 - . Most vertical siding--it is usually applied *vs. bdi batten* in 4'x 8' plywood and hardboard panels.
 - . Siding which is rough sawn or for other reasons is not intended to be painted.
 - . Aluminum, steel and vinyl siding--are all prefinished and are sold on the basis that they are maintenance free (won't need to be painted). Therefore, a primed overlaid siding wouldn't be considered a comparable product.
 - . Brick, stucco and wood-shingle facings which, as noted earlier, enjoy a unique position in the marketplace.
- The trade saw overlaid ponderosa pine siding as competing most directly with hardboard siding and lumber siding that is to be painted.
- Exhibit II shows prevalent materials, patterns, sizes and grades of the horizontal siding with which overlaid ponderosa pine would most likely compete.

1.2 Potential

The True Potential for Overlaid Ponderosa Pine Siding Is Estimated To Be 290 to 360 Million Square Feet

- For purposes of this screening study, potential is defined as including only new, single-family residential starts.
 - . Included as potential is all facing material used in the total new, single-family starts.

- . This market is by far the most important. Therefore, if a new siding product cannot be successfully sold in this market it would not be successful in the secondary markets.
- . This figure does not include secondary markets such as multi-family structures, detached garages, light commercial or repair & remodeling.
- Total facing potential in 1967 represents about 1.2 billion square feet.*
- . However, the TRUE potential is 290 million to 360 million square feet.

	<u>MM Sq. Ft.</u>
Hardboard	250-300
Lumber for painted uses	<u>40- 60</u>
TOTAL	290-360

1.3 Trends

Siding Usage Trends Favor Hardboard, Aluminum and Rough-Sawn Lumber

- There has been a major decline in the consumption of lumber siding in the post-war period.**
 - . Possibly as much as 40% in the last decade.
- This downward trend for painted lumber siding appears to be continuing.
 - . Chicago builders surveyed who were using lumber siding indicated they might switch to hardboard, aluminum or rough-sawn lumber.
 - . Sales of hardboard are reportedly increasing in historically strong lumber siding markets.
 - . Hardboard and aluminum are serious threats to traditional forms of cedar siding, especially in the Midwest.***

*Based on 840,000 single-family starts in 1967 at a use rate of about 1,450 square feet (14 to 15 squares) of siding per house.

**See Practical Builder's "1963 Census of Builder Activity"; Department of Labor, Bulletin #1231, 1940 through 1965.

***Western Wood Products Association: Clear Cedar Markets, Attitudes, Opportunities, 1966.

- . The Forest Service's unpublished survey of siding usage confirms this trend.*
- The demand for aluminum siding appears to be increasing at the fastest rate.
 - . Aluminum reportedly is making inroads into the hardboard and lumber siding markets.
- There is a greater demand for rough-sawn lumber siding.

The Use of Hardboard Siding Has Grown Rapidly Due to Several Product Advantages

- The product has several major advantages over lumber siding.
 - . Greater resistance to warp
 - . Greater dimensional stability.
 - . Good workability--will not split
 - . Available in long lengths of 12- to 16-foot without inclusion of shorter lengths.
 - . Available in 12-inch widths
 - . Always sold pre-primed
- The product suffers slightly because it is not solid wood and is more susceptible than lumber siding to chipping and breaking along the edges.

The Growth of Aluminum Siding Can Be Laid to Several Factors

- Having survived a period of time during which the aluminum siding industry had a very bad image, there is now a growing consumer acceptance of aluminum as a completely maintenance-free siding.
 - . Industry has undertaken a major consumer promotional program (i.e., TV, magazines).
- At the same time, builders are showing more and more willingness to offer aluminum siding since competent and reliable specialty applicators are available to install the material and properly service the builder.

*BENSON, Robert E.: *Intermountain Forest and Range Experiment Station (unpublished research paper on factors that affect outlook for lumber siding, 1968).*

- . This is one of the major factors for the recent growth of aluminum in new construction.
- Product design and product accessories have been improved.
 - . Aluminum siding can now satisfy a wider range of textures and colors.
 - . Improved soffit systems, rain-carrying equipment, shutters, etc. are now available and do, in fact, permit a complete maintenance-free exterior.
 - . Reportedly, aluminum is now available in a form that will resist dents due to hail.
- In addition to all else, the in-place cost of aluminum is lower than for either lumber or hardboard.
 - . This is in part because aluminum has a shorter channel--the conventional lumber dealer is by-passed and the siding is being sold on an installed basis.
 - . See Page 9 for cost information.

Growth of Rough-Sawn Siding Can Be Attributed Primarily to Trends in Contemporary House Styling

- This textured material is gaining increased usage as an accent or contrast siding as well as the primary facing on a house.
- In addition, redwood and cedar enjoy a reputation for superior weather-resistance characteristics.
- The trend toward rough-sawn lumber is fairly recent and quite remarkable as siding trends go. *64+66?*
 - . Trade sources estimate that five years ago rough-sawn lumber represented about 10% to 20% of total cedar and redwood siding. Today it accounts for nearly 50% to 60%.
 - . Builders indicate that the trend has been caused by their desire to differentiate the exterior of their homes and the rustic appearance has caught on.
 - . This trend is making inroads into the painted siding market and, again, at the expense of smooth-surface lumber siding.

Rigid PVC (Polyvinylchloride) Siding Represents an Infinitesimal Share of the New Construction Market

- The product has several advantages but suffers mainly from expansion/contraction problems, limited colors and high price.
 - . The advantages of vinyl are similar to aluminum but it claims a superiority over metal siding in that the color is all the way through the product rather than just on the surface.
 - . The trade anticipates that as these problems are solved, vinyl will make significant inroads into the new construction siding market.

Because of the Continuing Trend, Hardboard, Rather Than Lumber, Becomes the Prime Competitor for Overlaid Ponderosa Pine

- As lumber continues to represent less and less share of the painted siding market, the bulk of painted horizontal siding will be hardboard.
- If overlaid ponderosa pine is to succeed as a volume siding product, it must be able to compete effectively against hardboard horizontal siding as the two products, in principal, are interchangeable.
- Overlaid siding cannot compete with the prefinished siding products (aluminum, steel and vinyl) because the overlaid siding will not be prefinished.
 - . Therefore, the overlaid product will not be considered if the builder wants a prefinished siding.
 - . It is important to note, however, that the prefinished siding would compete with the overlaid siding. The builder can then decide if it is more to his advantage to buy a prefinished siding than to buy a primed product and paint it at the jobsite.

1.4 Pricing

Siding Is a Big Ticket Item, but the Builder Will Not Downgrade for Price

- Because of the large volume of siding used per home (1,400 to 1,500 square feet), builders are extremely price conscious. At the same time, however, builders refuse to trade minimum acceptable quality for lower price.

- Typical horizontal siding material costs at builder level are as follows:

<u>Material</u>	<u>Type</u>	<u>Finish</u>	<u>Grade</u>	<u>Size</u>	<u>Bldr Price Per M sq Ft</u>
Redwood	Bevel	Unprimed	A & Btr.	3/4"x10"xR/L*	\$260-\$270
Cedar	Bevel	Unprimed	A & Btr.	3/4"x10"xR/L*	260- 270
Hardboard	Board	Primed	-	7/16"x12"x16'	225- 240
Hardboard	Board	Prefinished Vinyl	-	7/16"x12"x16'	315- 330
Aluminum	Board	Prefinished Baked Enamel	Gauge .024	8"x 6"x12'	220- 240

**Random Lengths*

-
- Lumber siding prices fluctuate reflecting changes in demand, season and geography.
 - Hardboard siding prices are considerably more stable but do vary geographically because of freight differences.

The Installed Cost for a New Siding Product Should Not Exceed About 45¢ Per Square Foot

- The in-place cost of a siding product is the builder's basic concern.
- Precise in-place costs are difficult to develop since most builders do not know their installation and finishing costs.

- Following are some typical installed costs including a final finish.

	<u>Installed Cost Per Sq. Ft.</u>
Hardboard	42¢ - 44¢
Lumber	44 - 47
Aluminum	37 - 43
Brick	\$1.03-\$1.05

The Trade's Markups for Siding Tend To Be on the Low Side

- The prevailing markups for both lumber and hardboard siding reflect a volume-oriented price structure.
- The usual markups for lumber and hardboard are as follows:

	<u>Markup</u>	
	<u>Lumber</u>	<u>Hardboard</u>
Office Wholesaler	5%	5%-10%
Stocking Distributor	20%	20%
Lumber Dealer to:		
volume builder	20%-30%	15%-20%
small builder	33-1/3%	33-1/3%

2 - EVALUATION OF OVERLAID PONDEROSA PINE

2.1 Trade Reaction

The Overall Reaction to the Concept of Overlaid Ponderosa Pine Siding Is One of Cautious Interest

- This general attitude is expressed by both dealers and builders.
- "Caution" is required because of the unknown qualities relating to the product's performance and cost.
 - . Concern can be lessened if it is demonstrated to the trade's satisfaction that the product will perform according to conventional siding standards.
 - . The trade's interest in the product is definitely contingent upon knowing its cost.

Overlaid Ponderosa Pine Could Not Command a Premium Over Either Hardboard or Lumber Siding

- Both hardboard and lumber are fully acceptable to those who are currently using these siding materials.
 - . Overlaid ponderosa pine siding must offer a better value if it is to penetrate either of these two market segments.
- A "better value" to the hardboard customer will demand that the price be on a par with hardboard since the overlaid product offers only the following marginal product advantages to this customer:
 - . It is a solid wood.
 - . It offers 4" and 6" widths, not available in hardboard.
 - . It has a heavier shadowline.

- A "better value" to the lumber siding customer will require a lower price than lumber because the overlaid product offers little to the builder using lumber.
 - . The overlaid concept can promise standard 16-foot lengths, possibly 12-inch widths and better paint life.
 - . This type builder has demonstrated his loyalty to genuine wood siding (he does not consider paper overlay as genuine wood) because he has as yet refused to switch to less-costly, non-wood sidings which are available in standard lengths, 12-inch widths and offered promises of long-lasting paint finishes.

Builders Fear the Newness of the Overlaid Ponderosa Pine Product

- They have all had bad experiences with new products of one type or another that had not been properly developed and tested.
- The problems which a new siding product can cause are still fresh in some builders' minds.
 - . Builders indicated they had some bad experiences with siding that cupped, delaminated or discolored within two or three years after installation.
 - . Many builders have lived through similar experiences in the early days of hard-board sidings and they do not want to play a part in the "developmental" stages of new siding products.
- With respect to the proposed overlaid siding, builders are not convinced that a paper overlay will weather well.
 - . They are particularly concerned with possible delamination at the joints.

- Most builders emphasized that the product would have to be primed in order to obscure the "blue" color of the overlay.
 - . This reference to "priming" is solely as a technique for color change--an aesthetic consideration.
 - . If white paper overlay can be used, this would satisfy the objections builders have to the "blue" color.

There Is No Significant Resistance to the New Siding Product at the Dealer Level, But They Will Not Actively Sell It

- Dealers are willing to handle the product and are definitely interested in its true wood character.
 - . Few will inventory it until they are convinced it would sell.
- Dealers cannot be relied upon to develop the initial sales.
 - . They do little "selling" of siding now.
 - . Their primary role is to "fill" siding orders.
 - . Dealers state that the product must be pre-sold if it is to move in sufficient volume.
- Most dealers reflect concern with the reaction that builders will have toward the product.
 - . They are sensitive to the builder attitudes and anticipate the problems inherent in trying to sell a new siding product to them.

EXHIBIT III

STANDARD END-USE CRITERIA FOR EVALUATING A SIDING PRODUCT

<u>Standard End-Use Criteria</u>	<u>Very Imp.</u>	<u>Imp.</u>	<u>Marg'l Imp.</u>	<u>Not Imp.</u>	<u>Comparative Rating of Overlaid Ponderosa Pine</u>
<u>Weather Protection</u>					
Product Stability	X				?
Insulation Value			X		=
Noise Reduction			X		=
<u>Good Appearances</u>					
Type	X				=
Pattern, width, thickness	X				=
Color, stain, texture	X				=
<u>Installation</u>					
Application system	X				+
Workability	X				?
Susceptibility to damage	X				?
Finishing	X				=
<u>Maintenance</u>					
Material life	X				?
Finish life		X			=
Replacement ease			X		=
<u>Material Bias</u>					
		X			-
<u>Brand</u>					
Reputation among builders		X			?
Consumer Image			X		=

Source: SK&A, 1968

2.2 Product Performance Requirements

The Builder's Evaluation of Overlaid Ponderosa Pine Siding Is Based on a Comparison of Product Requirements With Product Performance

- Six basic product considerations have been identified.
 - . Weather protection
 - . Appearance
 - . Installation
 - . Maintenance
 - . Material bias
 - . Brand
- Each product consideration consists of several elements which contribute to a builder's overall evaluation of siding.
 - . The elements for each of the major product considerations are listed in Exhibit III.
- Exhibit III shows the relative importance of the end-use requirements and presents a comparative rating for the overlaid ponderosa pine product.
 - . Refer to Page *vii* for a review of details on methodology and ratings.

Weather Protection

The Ability of Overlaid Ponderosa Pine Siding to Provide Adequate Weather Protection Is Critical

- To be accepted, it is essential that a siding product provide satisfactory protection against prevailing weather conditions in two ways: It must be stable and it must not have a high rate of deterioration.

- Little reliance is placed on a siding product to provide either insulation or to reduce noise.
- Builders expressed concern that the overlaid ponderosa pine might not weather properly.
 - . They wanted to be assured that the new product would not warp, rot, twist or check.
 - . Excessive telegraphing of defects or delamination of the finish would be a serious problem.
 - . Buckling at the joints due to moisture expansion was a concern of the trade.
- The trade recognizes that in the few cases where the insulation and sound-absorbing qualities are important, the real wood characteristics of the overlaid ponderosa pine would be satisfactory.

The Appearance of Overlaid Ponderosa Pine Should Present No Problem

- Facing plays a major role in the aesthetics of a home and is therefore a major consideration in the builder's selection of a siding material.
 - . Sidings are used in combinations of materials and colors to increase aesthetic appeal as well as to create a greater variety of appearances within a given tract development.
 - . Some aspects of siding contribute greater appearance variation (e.g., pattern, width and color) while other aspects (e.g., shadowline) are less important.
 - . These combinations are selected on the basis of the builder's design preferences and are therefore subject to arbitrary change.

- To some extent, however, style of house often dictates the type of siding to be used.
 - . For example, colonial homes require horizontal siding.
 - . Traditional two-story homes require horizontal siding to achieve an appearance of spaciousness and to retain a low profile.
- The trade assumed that adequate product-line variations of type, patterns and sizes would be offered in the overlaid product to compare favorably with competing lines.
- The trade also anticipates that when the overlaid product is painted it would have the appearance of a painted lumber or hardboard siding.

Installation

The Trade Foresees No Problems in the Installation of the Overlaid Ponderosa Pine Siding and Anticipates a Possible Advantage Because of the Availability of Long Lengths

- Installation consideration is very important because of its effect on labor costs.
- The system required for application of the material must be compatible with present building methods.
 - . It must fit in with scheduling of construction sequences.
 - . Builders resist altering traditional construction methods.
- Builders want a siding that will not conflict with other stages of construction.
 - . Conflicts could result in damage to the siding by subcontractors during the course of their work.

- Siding must not require excessive labor to saw, nail, drill, etc.
 - . This affects application labor costs as well as labor cost of providing exits or entries for pipes, utilities, etc.
- Lumber and hardboard represent the standard for good workability.
- It is anticipated that the overlaid product can be applied in the same way as ordinary lumber siding, requiring no specialized methods or expertise.
- Availability of overlaid ponderosa pine siding in pre-primed, long lengths would be an important asset. Size and weight of the material could affect in-place costs due to labor fatigue.

Builders Are Concerned That the Overlay Might Not Stand Up During Installation

- The product must be easy to work with and should permit face nailing, sawing and drilling with conventional tools without causing damage to the overlay.
 - . This is most pertinent if installation is to be effected by builders' normal installation crews.

Overlaid Ponderosa Pine Must Be Sound Enough to Resist Accidental Damage to the Overlay and Breakage Because of Long Lengths

- Material handling on a construction site can be quite harsh and prefinishes can be easily damaged--either during application or in later construction phases.
 - . Builders questioned the ability of the overlay to withstand damage during these phases.
- The product must have sufficient strength and be flexible enough not to snap when picked up at one end and not tend to split when nailed.
- If on-site finishing or repair is required, it must be possible for conventional finishing methods to be applied.

Maintenance

Overlaid Ponderosa Pine Siding Must Offer a Life Expectancy of 15 to 20 Years

- Builders are very concerned with the life of the siding material per se (separate and distinct from the life of the finish).
 - . Therefore, siding should not rot.
- They are also concerned about call-back problems due to warping and/or popping of seams (due to the building settling).
- Builders fear that the paper overlay of the ponderosa pine will cause warping due to unbalanced stresses and possible moisture absorption from the reverse side.

The Finish Life of the Overlaid Product Is Expected to Last From Four to Five Years and Provide an Excellent Paint Base

- Builders are not nearly as concerned with the finish life as they are with the material life of the siding they use.
 - . Finish applied at the site is expected to last from four to five years--not 15 to 20 years which is expected for a pre-finished siding such as aluminum.
- Trade reaction is favorable to the good paint base offered by the overlay and assumed that it would take conventional paint which would not peel, blister or show uneven discoloration during the anticipated finish life.
- Some susceptibility to surface damage from hail or wind is tolerable, if predictable, and can be covered by normal homeowner insurance.

The Overlaid Siding System Should Provide for Easy Replacement of Individual Pieces When Needed

- Builders showed only moderate concern for this eventuality.

- They assumed that the overlaid siding would be as easy to replace as regular lumber siding.

Material Bias

Builders Fear the Paper Overlay May Produce a Negative Reaction Among Consumers

- A builder will not risk selling a siding material which is not universally accepted by his type of customer.
- Siding is usually required to meet traditional tastes or a particular local appeal.
- The price category of the home exerts a strong influence on the builder's choice of a siding material.
- Builders fear that the homeowner may consider the overlaid siding an inferior product because paper may have a negative connotation in the consumer's mind.
 - . This may be especially true when consumers are buying higher priced (custom) homes.

Brand Considerations

The Reputation of the Mills Which Produce Overlaid Ponderosa Pine Siding Will Have Some Initial Influence on Builders' Confidence in the Product

- It was not possible to accurately determine the effect brand has on a builder's choice of product. Their concern is not usually for the brand of lumber they buy but for the manufacturer's reputation for quality and backup services.
 - . Loyalty is generated by favorable past experiences.

- Home buyers are seldom concerned with the selection of the brand of siding to be installed on their homes.
 - . In the few cases where a particular brand is preferred, builders can easily divert the buyer to another brand.

3 - MARKETING GUIDELINES

The Following Guidelines Present Preliminary Marketing Recommendations for Overlaid Ponderosa Pine

- Since this is a screening study, only general marketing requirements can be presented.
 - . These guidelines are subject to revision after subsequent studies provide a more quantitative evaluation of the individual products.

3.1 Product Line

For the Most Part, Offer Bevel Siding

- Both bevel (lumber) and board (hardboard) sidings are used for much the same type of application.
 - . These two types account for the vast proportion of all horizontal siding.
 - . The builder views these two siding patterns as being essentially the same.
- The bevel siding provides a slight shadowline advantage over board siding.

Offer 16-Foot Lengths in 6-, 8- and 12-Inch Widths

- The long lengths that could be offered with overlaid ponderosa pine siding would be a distinct advantage, assuming that the overlaid product would not be too heavy and could be handled without breakage.
 - . Some builders may prefer 12-foot lengths but, generally speaking, it is desirable to minimize the number of joints.
- Wide widths in horizontal siding are popular and becoming more so.
 - . More and more 12-inch is being used in the Midwestern markets as well as elsewhere.
 - . Less and less 4-inch is being used in the Eastern markets.
- The 10-inch widths, generally available in lumber siding and the 12-inch widths, commonly available in hardboard siding, compete for the same "wide board" market.
 - . It is unlikely that both 10-inch and 12-inch are needed.
 - . The 12-inch width is probably more desirable because of fewer overlaps and lower in-place costs.
 - . It is doubtful that the builder will pay a premium for 12-inch siding.
- The 6- and 8-inch widths are desirable as a selling advantage but are probably not absolutely necessary.
 - . Builders occasionally think that 6- and 8-inch hardboard widths are not available, and under these circumstances, they will either rip 12-inch material to make 6-inch widths or procure lumber siding in 6- or 8-inch widths when needed.

- . This demonstrates a certain willingness to accept some product-line deficiencies if the product is adequate in other aspects.
- The most common widths (excluding 10 and 12 inch) are 6 and 8 inch.
- Siding thickness is a variable which should be evaluated after the product is further developed.
 - . 7/16" hardboard is acceptable.
 - . 3/4" is preferred in 10" lumber siding.
 - . A 12" width with a 3/4" shadow-line may provide superior aesthetics if weight and cost are acceptable.

Offer Product As Primed, White Siding

- Hardboard, the main competitor, is primed.
- The bluish color of the overlay is unacceptable.
 - . If the overlay itself eliminates a need for priming prior to a finish coat, a true primer will not be required...only the color change is needed.
- Back priming may be required by many builders if the siding is not overlaid on both sides.
 - . Builders feel that moisture absorption through the reverse side could have a variety of negative effects such as cupping, warping, etc.

3.2 Pricing

Price Overlaid Ponderosa Pine Competitive With Hardboard

- Hardboard is the prime competition and the overlaid product can not command a premium over hardboard.
- The selling price of ponderosa pine siding must be as stable as hardboard.
 - . This would be in sharp contrast with other lumber siding because lumber siding is noted for its wide price variation.

Be Prepared to Introduce the Overlaid Product at a Price Below Hardboard

- Because many builders will lack confidence in the new product, and because of growing builder loyalty to hardboard, price incentive will probably be required to crack most accounts.
- An appropriate price break would have to be about 10% under hardboard and should be maintained until sufficient initial accounts have been opened.

Quote Prices FOB Mill

- Because the overlaid siding is considered to be a lumber product, the dealers will be willing to purchase it on the same basis as lumber--FOB mill.
 - . Even though hardboard is sold on a delivered-price basis.
- This procedure will permit mills to ship the siding in mixed cars without complicating billing procedures.

Allow Markups That Are At Least Equal to Hardboard Markups

- Hardboard markups vary somewhat depending on circumstances, but the following can serve as guidelines:

Wholesaler	5%-10%
Stocking distributor	20%
Lumber dealer	25%

- Markups for overlaid ponderosa pine siding should be at least comparable at all trade levels in order to generate support for the new product.

3.3 Distribution

Sell Through Both Office Wholesalers and Stocking Distributors to Lumber Dealers

- Most lumber siding volume is sold through office wholesalers, although with hardboard, the stocking distributor is an equally important link.
- In nearly all cases, builders rely on local inventories.
- Local inventory needs are most often filled by lumber dealers.
 - . Direct mill-to-builder sales are more common in the Western section of the country.
 - . Stocking distributors bypass retail dealers quite frequently in all markets.
- Retail lumber dealers provide a complete lumber and service package to the builder which helps the dealer to retain the siding sales volume.
 - . Dealers usually provide take-off service.
 - . The dealer ships less-than-truckload to the job site.
 - . Dealers schedule deliveries to correspond to builders' construction schedules.
 - . Dealers frequently stack the lumber package at job site in convenient order of use.
 - . Builders are commonly carried on the dealer's books for 30, 60 and sometimes 90 days.
 - . Dealers provide a single, coordinated supply source for the total lumber package.

Adhere to Four- to Six-Week Shipping Schedules

- Currently, delivery of hardboard and lumber siding takes four to six weeks from mill order to dealer docks.

Anticipate Most Mill Shipments To Be Less Than Full Carload Lots

- The volume of siding on a full carload (50,000 to 60,000 square feet) is normally too large for most customers.
 - . Lumber mills ship most siding orders in mixed carloads and can easily accommodate this problem.
- The hardboard manufacturers ship in carload, truckload (TL) and less-than-truckload (LTL) quantities.
 - . Minimum carload quantity is 20,000 square feet.
 - . TL and LTL shipments range from 5,000 to 20,000 square feet.
 - . It is estimated that about half of the hardboard volume is in TL and LTL shipments.

Offer Continuous Supply

- To generate the confidence of builders and dealers, a mill must be in the market for keeps and not in and out on a whim.
 - . Lack of availability can be a serious problem with siding.
 - . The trade recalls that poor availability was a major factor in causing the erosion of the market position ponderosa pine once had. *siding*
- Care should be taken not to oversell production...especially in the early stages of product introduction.

3.4 Selling

Plan on an Intensive Personal Selling Effort at Builder Level

- A strong selling effort will be required to overcome the trade's resistance to a new product.
 - . As discussed earlier, many builders will have to be convinced that the product will perform satisfactorily.
 - . It will be necessary to overcome some strong builder loyalty to hardboard.
 - . Such a program will encourage dealers to stock the product.
- Hardboard manufacturers have maintained an effective missionary sales force active at both dealer and builder levels.
 - . The retaliatory influence that such an effort represents reinforces the absolute need for personal selling at builder level.
- It is doubtful whether even a superior lumber siding product could succeed under current market circumstances without a personal selling effort designed to offset the influence of hardboard missionary salesmen.
- It would seem that any intense personal selling effort will have to be maintained for a number of years.
 - . It will be important to be sure that a builder is permanently sold on the product after initially trying it.

Launch a Comprehensive Dealer Program

- An aggressive introductory promotion should incorporate a complete dealer program, including elements such as the following:
 - . Cooperative and trade advertising
 - . Dealer training

- . Sales-rebate program
- . Outside salesmen incentives

Offer a Complete Package of Merchandising Aids

- Several types of sales aids can be made effective sales tools.
 - . Technical literature will be important to the builder.
- Displays to be set up in model homes will help detail the "superior wood siding."
- Consumer literature will assuage builder concern regarding home-buyer reaction.
- Other promotional material and handouts for both the trade and consumer will increase the rate of product mention during sales calls and increase product awareness.
- Themes designed for retail lumber dealers should focus on the emotional appeal of "a real wood product to compete with hardboard."

Promotions to the Home Buyer Should Be Designed Primarily to Impress Builders and Dealers

- The trade should be made to believe that the consumer is being pre-sold.
- Develop convincing sales stories around the following themes to be directed toward hardboard competition.
 - . A breakthrough in siding
 - . All the advantages of a genuine wood siding.
 - ...Superior insulation
 - ...Damage resistant--cannot chip or pick it away
 - ...Structural advantages
 - ...Thicker

. All the advantages offered by synthetic sidings.

...Better paint base than plain wood

...Better weatherability than plain wood

...Will not rot, chip or peel

SECTION II

MARKET PROFILE FOR OVERLAID PONDEROSA PINE MOLDING AND TRIM

1. Description of Market
2. Evaluation of Overlaid
Ponderosa Pine Molding
and Trim
3. Marketing Guidelines

This section presents a summary of the major factors which have a considerable bearing on the market opportunities for overlaid ponderosa pine molding and trim.

SECTION II

MARKET PROFILE FOR OVERLAID PONDEROSA PINE MOLDING AND TRIM

1 - DESCRIPTION OF THE MARKET

1.1 Product Description

Molding and Trim Are Analagous Terms

- While many distinctions are made, the differences that exist have little meaning for a screening study of this nature.
- Tariff Schedules of the U.S.* defines wood moldings as "...wood molding worked to a pattern and having the same profile in cross section throughout their length."
- Standard moldings are described by Western Wood Molding Producers' Association as "...long narrow strips of wood, either in one piece or end glued, used to cover the joints around doors and windows at the junction of walls with floors and ceilings, and otherwise."
 - . "Opening" refers to moldings which are normally used to "trim around" a window or door opening; e.g., casing and stops.
 - . "Running trim" is a term used to identify molding patterns which are NOT used around openings; e.g., baseboard, cove and crown.

**Tariff Schedules of the United States, Schedule 2, Part 1B*

Standard Moldings Are Made Chiefly From Ponderosa, White and Southern Pine

- The various pine species account for 70% to 80% of the market.
- A number of hardwoods are used, including lauan (Philippine mahogany).
 - . Oak, birch, gum, walnut, maple, cherry and mahogany are all used to some extent for one type of molding or another.
- Estimates based on the analysis of 1959 and 1962 FHA inspected single-family dwellings*, suggest the following breakdown of molding species.

	<u>% of Total Molding Volume</u>
Ponderosa pine	45% - 50%
White pine	15 - 20
Douglas fir	10 - 15
Southern pine	10
Hardwoods	10

- Some non-lumber materials are used but represent a very small proportion of the molding market.
 - . Extruded vinyl and aluminum moldings are virtually all of the non-lumber moldings used.

There Is Considerable Regional Variation in the Market for Moldings and Trim

- The most common patterns in the local markets studied were as follows:
 - . Colonial and Ranch patterns are commonly used in Chicago.

*Refer to United States Department of Agriculture, Forest Service, Statistical Bulletin #366: Wood Products Used in Single-Family Homes, page 5

- . Bullnose or Sanitary (a variation of Ranch) is popular in Dallas.
- . In Los Angeles, Streamline (also a variation of Ranch) is widely used.
- The most common sizes used in Los Angeles vary considerably from Chicago.
 - . While 1/2"x 3-1/4" base is popular in Chicago, 3/8"x 2-1/4" is more popular in Los Angeles.
 - . A common Chicago casing is 11/16"x 2-1/4"; its counterpart in Los Angeles is 11/16"x 1-5/8".
- There is no statistical data available showing regional variations.

The Total Molding and Trim Market Consists of Many Segments

- For purposes of this screening study, attention has been focused on the new construction and repair & remodeling segments of the stock interior molding market.
 - . This definition excludes custom moldings and exterior trim.
- The stock interior moldings market represents an estimated 85% of the total moldings and trim.
 - . Trade sources estimate that approximately 95% of the total molding usage consists of stock molding, of which about 90% of the total molding and trim is interior members.
- The new construction market is composed of both single-family and multiple-family dwellings.
 - . Generally speaking, the same patterns and sizes are used in both types of construction.
 - . Mobile homes excluded from this market.

- The repair & remodeling market embraces both professional and do-it-yourself customers.
 - . Little is known about the professional remodeler's molding and trim use, but it is generally thought to be fairly similar to new construction patterns, except for a somewhat greater usage of vinyl-clad, grain-printed molding. This type of molding will do a better job of matching grain-printed panels.
 - . The do-it-yourself customer purchases much of his molding in conjunction with paneling. Therefore, he will use either the grain-printed molding or lumber molding which he stains to match the paneling.
- There is a variety of obscure ways in which the do-it-yourself customer uses molding pieces.
 - . Trellises and wall decorations are some of the many miscellaneous uses for molding.
 - . Several trade sources believe that molding use of this type could represent a significant proportion (15% to 30%) of the total molding and trim volume.

Overlaid Ponderosa Pine Molding Will Compete Primarily With Interior Painted Trim--Both Finger-Jointed and Solid

- Because of the nature of the overlaid trim product, it can be considered only for those uses where the trim is finished in something other than natural stains or finishes.
 - . A natural finish would be possible with the present product concept if a grain-printed overlay were used.
 - . The product studied, however, was not presented as offering the grain-printed overlay.

- Painted molding and trim accounts for about 60% to 70% of interior molding and trim in new construction.
 - . Trade sources generally agree that primed trim represents a very small proportion (perhaps 5%) of the total trim used.
- About 50% of softwood molding and trim is finger-jointed, and nearly all of it is finished with paint or printed overlays.
 - . The balance of the volume is solid clears and this category includes molding and trim which is to be painted.
- The overlaid product would therefore compete directly with both finger-jointed and solid clear material that is to be painted.

1.2 Potential

The Prime Potential for Overlaid Ponderosa Pine Molding Would Be About \$100 Million at Mill Level

- This potential is comprised of painted softwood molding and trim used in new residential construction and repair & remodeling.
 - . Natural-finished pine, redwood, hardwoods and non-lumber molding are excluded from this prime potential.
- Domestic production (shipments) of wood moldings and certain wood carvings were valued at \$199 million in 1965.*
 - . About 95% (or \$185 million) is standard moldings, of which only 90% (or \$165 million) is interior.

**Compiled by Western Wood Molding Producers' Association from U.S. Department of Commerce statistics.*

- This total includes all finger-jointed material to be used as the core for manufacturing grain-printed molding.
- The estimated \$100 million prime potential is based on the trade estimates that 60% to 70% of the \$165 million of standard interior molding is painted.

1.3 Trends

Dollar Sales for Molding and Trim Have Been Growing While Board Feet Consumption Has Shrunk

- The value of industry shipments at \$199 million in 1965 represents a 6% annual growth since 1958.*
- Concurrently, trade sources report that the board footage of molding and trim has been decreasing because today moldings are narrower and thus do not use as much lumber as in the past.
 - . However, reportedly, lineal footage produced has been increasing.

The Trend Toward Finger-Jointed Molding and Trim Continues To Be Favorable for Painted Finishes

- The use of finger-jointed material in new homes will continue to grow as the supply of select grade material becomes less abundant.
 - . One published trade source** reports that production of finger-jointed molding and trim rose 36% in 1967 over 1966.

*Compiled by Western Wood Molding Producers' Association from U.S. Department of Commerce Statistics.

**Crow's Weekly Letter, 3/22/68

EXHIBIT IV

TYPICAL BUILDER PRICE LIST FOR OVERLAID PONDEROSA PINE MOLDING AND TRIM

<u>Profiles</u>	<u>Sizes (Inches)</u>	<u>Builder Price ¢ Per Lineal Ft.</u>
Base	1/2 x 3-1/4 Colonial	12
	1/2 x 4-1/4 Colonial	18
	5/8 x 5-1/2 Pilaster Base	24
	1/2 x 3-1/4 Ranch	12-1/2
	1/2 x 4-1/4 1 Round Edge	18
	5/8 x 3-1/2 1 Round Edge	14
	5/8 x 4-1/4 1 Round Edge	18
Base Cap	5/8 x 1-5/8	8
Base Shoe	1/2 x 3/4	3
Casing	5/8 x 2-1/2 2 Round Edge	10
	5/8 x 3-1/2 2 Round Edge	14
	5/8 x 5-1/2 2 Round Edge	24
	11/16x 2-1/2 Colonial	10
	11/16x 2-1/4 Ranch	10
Cove	3/4 x 3/4	3-1/2
	3/4 x 7/8	4
	3/4 x 1-1/8	5
	3/4 x 1-3/4	8
	3/4 x 2-1/4	11
Crown	3/4 x 1-3/4	8
	3/4 x 2-1/4	11
	3/4 x 2-3/4	13
	3/4 x 3-1/4	16
	3/4 x 3-5/8	18
Quarter Round	1/4 x 1/4	2
	3/8 x 3/8	2-1/2
	1/2 x 1/2	2-3/4
	3/4 x 3/4	3

- . The increased usage of finger-jointed material indicates there will be a trend toward painted moldings since they are usually painted.

Grain-Printed Molding and Trim Is Rapidly Gaining Acceptance

- Grain-printed and grain-print overlaid molding has moved strongly into the residential repair & remodeling market and is now receiving broader use in new home construction.
- . Major manufacturers are experiencing shifts within the marketplace and express much interest in developing the market for grain-printed moldings.
- The growing familiarity and acceptance of grain-print overlays is conditioning the marketplace to accept an overlay (such as vulcanized fiber) for painted moldings.

1.4 Pricing

Pricing Comparisons Are Difficult to Develop Because of Variations in Patterns, Sizes, Grades, Etc.

- Generally speaking, finger-jointed molding is priced at about 15% to 20% less than comparable clear pine molding.
- Exhibit IV on the opposite page shows some typical ponderosa pine molding and trim prices in the Chicago market.

Markups for Molding & Trim Are Generally Quite Attractive to the Trade

- The normal markups vary widely under different circumstances, but the following markups are reported to be most common.

Wholesale jobber: 33% - 50%

Retail lumber dealer to:

to volume builder	33% - 50%
to small builder	40% - 60%

2 - EVALUATION OF OVERLAID PONDEROSA PINE

2.1 Trade Reaction.

The Trade Readily Recognizes That the Concept of Overlaid Ponderosa Pine Molding and Trim Has Obvious Merit

- This evaluation is qualified with the assumption that the product will perform as well as competing products.
 - . Both builders and dealers believe that the overlaid product will meet all normal requirements.
- Most builders and dealers are quick to indicate that an overlaid finger-jointed product would certainly deliver a superior surface appearance for painted trim.
- All recognize that the standard long-lengths are an important feature.

Overall Reaction Suggests That the Product Can Command a Premium Over Finger-Jointed Molding

- Virtually all builders contacted expressed a willingness to buy and try this new type of trim.
 - . They found it easy to believe that it would perform properly and most thought it was worth more than finger-jointed material.
 - . However, all resisted the idea of paying a price equal to solid clears.
- Retail dealers believe they can sell the product without great difficulty.

EXHIBIT V

STANDARD END-USE CRITERIA FOR EVALUATING PAINTED MOLDING AND TRIM

<u>Standard End-Use Criteria</u>	<u>Very Imp.</u>	<u>Imp.</u>	<u>Marg'l Imp.</u>	<u>Not Imp.</u>	<u>Comparative Rating of Overlaid Ponderosa Pine</u>
<u>Appearance</u>					
Pattern and type variation	X				=
Color	X				=
Smooth Surface	X				? (+)
<u>Installation</u>					
Filling	X				?
Sanding	X				?
Cutting/Nailing	X				?
Susceptibility to damage	X				?
Paintability	X				=
<u>Maintenance</u>					
Resistance to surface damage	X				?
Refinishing	X				?
<u>Brand</u>					
Confidence in manufacturer				X	?

Source: SK&A 1968

- At the same time dealers reflect a normal resistance to a new product.
 - . They believe the product will pose the same retailing complications as a specialty product such as grain-printed moldings; i.e., additional inventory, separate rack space, more merchandising and problems of order mix.
 - . As with any new product, they would rather assure themselves that the product sells before they invest in any inventory.
- By-and-large dealers feel the product can command a premium over finger-jointed material and some even think it can compete on a price par with solid clears.

2.2 Product Performance Requirements

The Product Requirements for a Molding Product Are Fairly Straightforward

- The major considerations can be grouped into four categories.
 - . Appearance
 - . Installation
 - . Maintenance
 - . Brand
- Exhibit V presents the relative importance of the various criteria and each is discussed in detail.

Appearance

If the Overlaid Product's Finished Appearance is Comparable to Finger-Jointed Moldings, It Will Be Acceptable

- Builders rate the appearance factor as being a very important element in their buying decision.
 - . They desire a variety of patterns in order to select the pattern most suitable for specific end uses.
 - . Moldings and trim must permit finishing in a variety of colors to coordinate with room color variations. This also includes staining to match wood paneling prevalent in the do-it-yourself market.
- It is assumed by the trade that the required number of standard patterns would be available in overlaid ponderosa pine moldings and trim.
 - . The availability of an appropriate selection of patterns is important since local preferences vary somewhat.
- If core defects will not telegraph through the overlay, its surface will be considered superior to competition.
 - . However, fears were apparent that grain rise and other core defects would become noticeable. These would not be tolerated by the trade.
 - . Finger-jointed material is the maximum "defect" allowable to achieve an acceptable surface.

Installation

The Overlay Must Be Compatible With a Variety of Filler Materials and Working Techniques to Enable Unrestricted Use

- Countersunk nail holes and badly-fitting joints must take filler materials.
- Outside corners and mitered edges must take sanding and filling to eliminate rough edges without causing irreparable damage to the paper overlay.
- On-site workability is of paramount importance to molding and trim; it must be easily cut and not subject to splitting when nailed.
- The trade expressed doubts concerning the compatibility of the overlay and various fillers which are currently in use.
 - . It is feared that the finish will be subject to discoloration caused by oils used in the filler compounds.
- Hidden core defects may cause cutting or nailing problems in working the overlaid product.
- The trade generally does not believe that the strength of the core material in overlaid, low-grade, ponderosa pine will be sufficient to withstand the stress of handling long lengths, especially when picked up at one end.

The Trade Is Concerned That the Overlay's Susceptibility to Cuts and Tears Will Create On-Site Repair Problems

- The ease with which misfitted corners, joints and accidental surface damage can be corrected is very important.
 - . Because the product is so often situated close to the floor, it is liable to damage from bumps with tools and ladders during construction.

Builders Assume that Conventional Paints Can Be Used Successfully on the Overlaid Product

- This is a very important consideration because any deviation from conventional methods would constitute increased in-place costs.
- The trade envisions the overlay to be equal with competition with respect to paintability.

Maintenance

To Compare Favorably With Competition, the Overlay Must Resist Normal Wear, Tear and Bumping and Hold a Good Paint Finish From Four to Five Years

- Builders claim that molding and trim must be able to resist impact due to bumps and scuffs from furniture and toys, etc.
- They also claim that it must be repaintable.
- Builders reflected concern regarding the ability of the paper overlay to resist abrasion and impact.
- The builders believe that the overlay could not be properly refinished if it is damaged.
- The builders questioned the overlay's ability to withstand the removing of accidental paint drips by sanding, scraping or paint-removing chemicals.

Brand

Manufacturer Reputation and Guarantee Could Become Important to Builder Acceptance of the Overlaid Product

- It is not possible to accurately determine the role of 'manufacturer confidence' in affecting the builder's choice of product.
 - . This is not normally a builder consideration when buying molding and trim.

- Millwork manufacturers are beginning to brand millwork products in an effort to protect individual quality reputations.

- . It is possible that if the overlaid molding is produced by a reliable manufacturer, the trade will have greater confidence in the product.

3 - MARKETING GUIDELINES

The Following Guidelines Present Preliminary Marketing Recommendations for Overlaid Ponderosa Pine Molding and Trim

- Since this is a screening study, only general marketing requirements can be presented.
 - . These guidelines are subject to revision after subsequent studies provide a more quantitative evaluation of the individual products.

3.1 Product Line

Offer Base, Casing, Cove and Crown Only

- While a wide variety of molding pieces are normally available, the demand in new construction can be met with a more limited line.
- The volume items in new construction are base, casing and cove.
 - . Base serves as baseboard where wall meets floor.
 - . Casing designs provide a decorative trim around doors, windows and other openings.
 - . Cove and crown moldings soften the sharp lines where two planes meet, usually at a breakwall and ceiling.

- Smaller trim items, such as shoe and quarter round, are regularly required, but these needs can be filled from available clear or finger-jointed stock.
 - . Shoe is generally used where the baseboard meets the floor.
 - . Quarter round has a variety of uses, mostly at inside corners.
 - . The small members need not be overlaid if it is economically less feasible. The trade sees no problem in utilizing an overlaid molding product and these small trim pieces on the same job.
 - . Both will be painted and it is assumed that there will be no distinguishable difference.
- Other molding and trim items are frequently required for rooms finished with paneling or other, less-common, ornate treatments.
 - . Under these circumstances the product must be capable of a natural finish which excludes the overlaid product in its present form.

Offer a Limited Variety of Base and Casing Patterns

- Further study is needed to identify the minimum number of patterns within profiles which could satisfy the various geographical regions and the local markets.
 - . Ranch (including Streamline, Sanitary and Bullnose) and Colonial patterns would be adequate for Chicago, Dallas and Los Angeles.
 - . Common Ranch patterns within the base profile are WP 700 to WP 742.

- . Colonial base patterns are WP 600 to WP 634.
- . Some Ranch patterns within the casing profile are WP 301 to WP 330.
- . Some Colonial casing patterns are WP 331, 332, 341-346, 351-356, and 440.

Offer Most Common Size Variations

- A quantitative survey would be required to pinpoint the necessary size variations for each molding and trim member; however, only the most common sizes must necessarily be in the line.
- . The need for other size variations can be filled from standard stock molding and trim.

Offer Standard Lengths

- In the opinion of the trade, standard lengths will be important in competing with a finger-jointed product.
- . Base: 10 and 12 feet
- . Casing: 7 and 10 feet
- . Cove and Crown: 10 and 12 feet

Offer the Product as Primed Molding and Trim

- Homeowners require a variety of interior room finishes; therefore, the product must allow for this.
- . A primed product would provide easier second-coat finishes in a variety of colors.

- While very little molding and trim is primed, the "bluish" color of the overlay is undesirable and a white prime would be helpful.
 - . If a white overlay could be used it would not be necessary to prime the molding.
- A primed molding does not save the builder any painting cost.
 - . Builders indicate that their paint subcontractors will not lower their prices if primed moldings are used, because it would not significantly lower their costs.

3.2 Pricing

Price Overlaid Ponderosa Pine Molding and Trim at a Premium Over Finger-Jointed Material

- Finger-jointed material is the prime competitor and the overlaid product can definitely command a premium.
 - . The premium can be 10% to 15% if the final product, promotion and program are right.
 - . Such a premium over finger-jointed will mean that the overlay will be priced about 5% below clears. This will be sufficient to induce the builder to buy.
- Many builders who have rejected finger-jointed, even for painted uses, see the overlaid product as definitely superior and almost as acceptable as solid clears.

Quote Prices FOB Mill With Full Freight Allowed

- This is the prevailing practice in today's lumber market and can be applied to the overlaid product.

Allow Conventional Molding and Trim Markups

- Markups should be as attractive as conventional pine molding and trim.
 - . Dealers indicated that they are obtaining a 50% markup.
 - . Manufacturers indicated that many distributors are obtaining markups comparable to the dealers.

3.3 Distribution

Sell Through Distributor-Jobbers to Retail Lumber Dealers

- Molding is sold primarily from mill (or molding plant) to stocking distributor.
 - . Distribution variations are made for key accounts; however, large retail chains also buy moldings directly from the mill.
- It is becoming increasingly more frequent for distributors to bypass the retail lumber dealer.
 - . Dealers report that distributors are selling windows, doors and millwork directly to the builders.
 - . However, lumber dealers still account for more than half of the total molding market.
- Retail dealers retain the inherent advantage of being able to provide a broad lumber package with coordinated services.

Adhere to Four- to Six-Week Shipping Schedules

- Until recently 30-day or less delivery was expected.
 - . Since molding is now more in demand, back orders have frequently caused delivery to be as long as 45 days.
 - . Dealers claim deliveries of grain-printed moldings require 8 to 12 weeks.

Anticipate Most Shipments To Be in Full Carloads

- Trade sources report that most shipments are full cars.
 - . A full car of molding and trim is valued at about \$14,000 to \$15,000 (mill price).
 - . In many cases this is square-edge stock shipped to molding plants for remanufacture into various patterns.
 - . Mixed-car shipments of molding and other lumber products decreased after molding plants became prevalent.
- Mills do make some truckload shipments to primary markets which are closely located.
 - . In California customers frequently make their own pickups at the mill.

3.4 Selling

Expect to Pursue Normal Molding and Trim Selling Techniques

- In most cases, telephone selling should be sufficient.
- While the overlaid product will definitely be a NEW product, it is in many respects in tune with industry developments.
 - . As such, it is "a natural" and will require less initial sales effort than might otherwise be expected.
- Supplier relationships between mill and jobber and between jobber and his customer are fairly well established.
 - . In this environment, where there is much less switching from supplier to supplier, the working and personal relationships that develop will be an advantage when introducing the new overlaid product.

An Industry Promotion Via Trade Association Efforts Should Be Considered

- The overlaid product promises to be a problem solver for the entire industry.
 - . It will benefit from broad industry support.
 - . Molding and trim trade associations have been effective industry mouth-pieces.
 - . Trade associations are interested because of a growing shortage of clear pine molding.

Introductory Promotions Should Be Directed to Distributors, Dealers and Builders

- Efforts at builder level should command most of the attention.
 - . Builders need some convincing technical data to eliminate any doubts about the performance capabilities of the overlay.
- Little can be gained from any consumer or home buyer promotion.

SECTION III

MARKET PROFILE FOR OVERLAID PONDEROSA PINE SHELVING

1. Description of Market
2. Evaluation of Overlaid
Ponderosa Pine Shelving
3. Marketing Guidelines

This section presents a summary of the major factors which have a considerable bearing on the market opportunities for overlaid ponderosa pine shelving.

SECTION III

MARKET PROFILE FOR OVERLAID PONDEROSA PINE SHELVING

I - DESCRIPTION OF MARKET

1.1 Product Description

The Primary Material Used for Shelving in the Single-Family, Garden Apartment and Repair & Remodeling Markets Is Common Idaho White Pine and Ponderosa Pine

- Builders and dealers estimate that pine lumber accounts for 75% of all shelving material used in new construction.
- The type of shelving material varies somewhat depending on where it will be used as well as the size of the shelf per se.
 - . One type of shelving is used for exposed installations, where another would be used in a closet.
 - . Plywood, and to some extent, particle-board are used for deep linen-closet shelves because these materials come in wide widths.
- The data in Exhibit VI was gathered by the Forest Service from home builders in twenty U.S. cities and indicates the type of material being used in new single-family construction.
 - . This survey indicates that 81% of the single-family builders used lumber for bedroom and coat closet shelving.
 - . Plywood is used by 21% of the builders in linen and storage closets.
 - . Metal shelving is rarely used any place in the home.

EXHIBIT VI

TYPE OF SHELVING MATERIAL USED BY SINGLE-FAMILY HOME BUILDERS IN 1967

<u>Material Used</u>	<u>% of Total Builders Using Shelving In:</u>				
	<u>Bedroom/ Coat Closet</u>	<u>Linen and Storage Closet</u>	<u>Kitchen*</u>	<u>Book</u>	<u>Garage, Utility and Other</u>
Lumber	81%	66%	54%	57%	17%
Plywood	7	21	4	8	2
Particleboard	14	14	11	4	4
Metal	3	3	1	1	1
Other	1	1	1	1	1
Did Not Use Shelving	-	1%	38%	36%	79%
Total Builders	100%**	100%	100%	100%	100%

**Excludes kitchen shelves not installed by builders.*

***Does not add to 100% because builders used more than one type of shelving.*

*Source: BENSON, Robert E: Intermountain Forest and Range Experiment Station
(unpublished research paper on factors that affect
shelving, 1968.)*

Lumber Continues to Dominate the Shelving Market Because of Several Distinct Advantages

- Lumber is less expensive and carpenters find it easier to install.
- Perhaps even more importantly, lumber used for shelving can be used for other purposes in the home as well and is readily available.
 - . Lumber used for quality shelving can also be used for fascia and frieze.
 - . Low-grade lumber can be used for shelving in garages or basements.
 - . Lumber dealers have adequate stocks of lumber shelving and can deliver it along with the builder's lumber package.
- Although lumber warps, builders are generally willing to "live with" the problem.

Plywood, Particleboard, Redwood and Hardwood Are Frequently Purchased for Special Shelving

- Plywood and particleboard are used for large surface areas such as linen closets.
 - . 4'x 8' sheets of plywood or particleboard (in 5/8" and 3/4" thicknesses) are used for shelving to fit into deep (20" to 24") closets.
 - . Both have the advantage of being more stable than lumber which is likely to warp or cup when used to cover a large area.
 - . Plywood has one serious drawback; it requires an edge banding to hide the core defects.
 - . Particleboard does not require an edge banding but it is desirable to prevent edge chipping.

- Lumber, such as redwood or walnut, is generally used for exposed wall-shelf units and is frequently sold with matching support braces.

Metal Shelving Is Being Used in the Relatively Few Cases Where Builders Have Many Shelves Identical in Size to Install

- Metal shelves are practical for use in new construction projects such as large apartment buildings.
 - . Without a degree of consistency in the sizes throughout the project, the purchasing and/or installation becomes needlessly expensive.
 - . While considerably more expensive, metal shelving offers minimum maintenance to the apartment owner.
- The primary advantage of metal shelves is lack of warpage or distortion.
 - . Most builders of new homes and garden apartments agree that refinishing of shelves is not a major consideration and, in this regard, metal shelving has no real advantage.
- Metal has made some inroads because it is prefinished and sold as a complete packaged product.
 - . The builder receives poles, cleats, screws and shelf in one package.
- The most serious disadvantages of metal shelving, are its very high cost and the difficulty carpenters have fitting the shelf where closet walls are not square.

Characteristics of Lumber Shelving Are Fairly Consistent

- Most builders and dealers indicate that #2 Common pine (ponderosa is most frequently used) is an acceptable product at minimum cost.
 - . Some #3 and a small amount of #1 is used, but it appears that builders sometimes confuse #2 with #1.

- Lumber shelving is usually bought in random lengths.
 - . Builders prefer 10-foot and 16-foot lengths. These lengths provide the best multiples for a minimum of waste.
- Normally builders use 1"x12" boards, although 4", 8" and 10" boards are used in combinations to provide extended widths.

Overlaid Ponderosa Pine Shelving Would Compete With Nearly All Shelving Materials Used in New Construction, but This Would Not Be True in the Repair & Remodeling Market

- Most of the shelving used in new construction is installed in closets of various types and in garages rather than being exposed on walls.
 - . The overlaid pine shelving could compete with all of this market.
- Most of the exposed shelving is purchased by the homeowner. In such cases, the aesthetic characteristics of the species used is important.
 - . Because the overlaid pine does not have the required aesthetic appeal it could not compete in this segment of the shelving market.
 - . Redwood and hardwood lumber and vinyl overlays are primarily used for exposed shelving.

1.2 Potential

Total Residential Shelving Potential Is Estimated To Be 70 to 90 Million Board Feet Annually

- For purposes of this screening study the residential shelving market has been identified as all single-family and multi-family dwelling units, plus all repair & remodeling.

- . All exposed (decorative) shelving is excluded.
- Based on a consumption rate of about 50 board feet per single-family unit and 25 board feet per multi-family unit, total new construction would represent about 50 to 60 million board feet.
- The repair & remodeling market is too nebulous to provide reliable evidence of market size but certain assumptions have been made.
 - . On the premise that 5% of total owner-occupied households consume 10 board feet per year, the repair & remodeling market could represent an estimated 20 to 30 million board feet.
 - . This estimate is in part based on the fact that for many building products, the residential repair & remodeling market accounts for 15% to 25% of total sales. Because the repair & remodeling market is believed to be relatively more important for shelving, this segment might represent as much as 30% to 40% of total shelving sales.

1.3 Trends

The Trend Indicates That Pine Lumber Will Continue to Dominate the Shelving Market

- While it is apparent that there is some growing builder acceptance of plywood and particleboard for shelving, builders and dealers gave no indication of a strong shift to these materials.
 - . The trade reports that the inherent advantages of lumber are sufficient to retain a major share of the shelving market for lumber.

The Total Potential for Shelving May Increase in the Future

- Housing starts are forecasted to increase substantially by 1975.
 - . New home construction is anticipated to be over 2 million per year.
 - . Shelving demand is expected to increase proportionately.
- Demand for shelving may increase because of greater usage per closet.
 - . A few builders indicated that double shelves (two shelves--one on top of the other) in clothes closets are being used more frequently; most, however, did not.

1.4 Pricing

Shelving Is a Price-Oriented Product

- Builders' primary interest is in an acceptable product at minimum cost.
 - . They think of shelving as a product of very little consequence as long as it provides the required performance.

- Some typical material costs at builder level are as follows:

<u>Material</u>	<u>Grade</u>	<u>Sizes</u>	<u>Estimated Builder Price</u>
Ponderosa Pine	#2 Common	1"x10" & 12" R/L*--4'-16'	\$190 per M Board Feet
Ponderosa Pine	#3 Common	1"x10" to 12" R/L*--4'-16'	\$150-\$160 Per M Board Feet
Plywood	AC Exterior	4'x 8'x 3/4"	\$240-\$250 Per M Square Feet
Particleboard	Core Stock	4'x 8'x 3/4"	\$210-\$220 Per M Square Feet
Metal		12"x 24"**	\$2.40 per Set (\$1,200 Per M Square Feet)

**Random Lengths*

***Includes rod expandable to 36 inches*

Markups for Lumber Shelving Vary Widely

- Dealers indicated that profits from the sale of shelving material are very attractive, depending upon the type of customer.
- Dealer markups range from 33-1/3% to 60% of delivered costs.
 - . The highest markups, 50% to 60%, usually are on shelving sold to homeowners.
 - . To volume builder customers markups are closer to 20% to 25%.

2 - EVALUATION OF OVERLAID PONDEROSA PINE SHELVING

2.1 Trade Reaction

Builders and Dealers See a Market for the Overlaid Ponderosa Pine Shelving Material If Priced Competitively With Shelving Material Currently Used

- Builder reaction to overlaid ponderosa pine shelving is favorable.
 - . Builders consider the appearance to be superior to lumber presently used for shelving.
 - . They recognize that the product would require little or no preparation (sanding or nosing).
 - . They believed it quite possible that no finish coat would be needed if the product were preprimed.
 - . Standard long lengths would be an advantage.
- Neither dealers nor builders felt the overlaid product would sell unless it was priced in the same range as #2 Common ponderosa pine.
- Several important qualifications regarding the product were offered by the trade.
 - . There would be more interest in the shelf product if the overlay were white or off-white rather than blue.
 - . Most thought the product would be enhanced if it were overlaid on both sides. However, the cost factor was not considered.
 - . Most builders were concerned that greater cupping and warpage than is generally experienced with wood may occur because the overlay is on only one side.

EXHIBIT VII

STANDARD END-USE CRITERIA FOR EVALUATING
A SHELVING PRODUCT

<u>Standard End-Use Criteria</u>	<u>Very Imp.</u>	<u>Imp.</u>	<u>Marg'l Imp.</u>	<u>Not Imp.</u>	<u>Comparative Rating of Overlaid Ponderosa Pine</u>
<u>Function</u>					
Storage Support	X				?
<u>Installation</u>					
Cutting/fitting	X				=
Nailing	X				?
Edging	X				+
Long lengths		X			+
<u>Good Appearance</u>					
Surface characteristics		X			+
Color		X			+/=
<u>Maintenance</u>					
Product Stability		X			? (+)
Finish life		X			? (+)

Source: SK&A 1968

Little Favorable Reaction Was Received From Either Builders or Dealers to the Concept of a Shelving System

- It was recognized in the early phases of this screening study that the potential for the overlaid pine would, to a great extent, depend on the ability of the material to compete with #2 Common pine.
 - . It was anticipated that it would be unlikely that the overlaid material could be sold profitably at this price.
- Accordingly, in the final phase of the study, attention was focused on the concept of a complete package shelf system similar to metal shelving. It was hoped that the convenience and mix of a package system could obscure the premium required for overlaid ponderosa pine.
- In very few instances could either builder or dealer be stimulated enough to express much interest in a package concept.
 - . There seems to be more interest among builders currently using higher-priced shelving material, but this segment represents only 5% to 10% of the total shelving market.

2.2 Product Performance Requirements

Overall, the Performance Requirements for Shelving Are Not Severe

- Exhibit VII shows the relative importance of the various criteria and comparative rating of overlaid ponderosa pine.

- The standard end-use criteria for shelving are grouped into four categories:
 - . Function
 - . Installation
 - . Appearance
 - . Maintenance

Function

The Trade Is Concerned That Low-Grade Core Material in Ponderosa Pine Would Not Have Sufficient Strength for Use as Shelving

- The inherent function of shelving requires that it have sufficient strength to support various items normally found in a home.
 - . Builders consider that a new product must have the strength characteristic of #3 Common pine--the standard shelving material.
 - . Shelving with greater deflection than the standard would be unsatisfactory because more support brackets would be required.

Installation

It Is Assumed That the Overlaid Product Can Be Installed in a Manner Similar to Lumber Shelving

- A basic concern with shelving is the ease with which it can be installed.
 - . A major strength of lumber shelving is its superior workability.

- . An acceptable product must be easily cut, fitted and nailed on the job site.
- Shelf material must not be subject to splitting when nailed and must have sufficient nail-holding power so the nails will not withdraw if the shelf warps.
- Since overlaid ponderosa pine is a lumber product, builders anticipate that it will provide a comparable degree of workability.
- The trade's acceptance of the overlaid product will depend on what effect the low-grade core has on the nailability.
 - . If nailing into hidden defects would cause splitting or knot movement, the product would be rejected.
 - . The concern in this regard is accentuated because nailing frequently occurs at the extreme ends of the shelf where splitting is more likely to develop.

An Inherent Advantage in the Concept of Overlaid Ponderosa Pine Shelving Is the Elimination of On-Site Edge Finishing

- Ordinary lumber shelving is often sanded or nosed to eliminate splinters or rough cuts and to enhance the overall appearance.
 - . Plywood is usually edged with a strip of wood to achieve the same effect.
- Long shelf boards are of interest to builders because less labor is required to select and install proper sizes.
 - . Also there is less waste when one long board can provide two or three properly-sized shelf pieces.
 - . The long lengths minimize the need for additional supports.

- The finished appearance of the overlaid shelf obviates any need for sanding or nosing the edges.
 - . The builder recognizes that this represents lower in-place cost, but he is unaware of how much of a savings, if any, it would really represent.
- Builders felt that the overlaid concept would allow the mills to manufacture shelving in wider widths that is normally only available in particleboard and plywood.
 - . The overlay would permit the mills to edge glue and thereby attain the wider widths.

Good Appearance

The Trade Rated the Overlaid Product's Surface Characteristics Superior to Presently Used Lumber Materials

- Although shelving material usually has a relatively smooth face, the trade does not consider surface defects to be too serious since once installed they are not easily seen.
 - . Therefore, this feature is not as important to the builders as other criteris such as installation.
- The new product has a distinct advantage because the overlay hides surface defects normally visible in the low-grade pine commonly used for shelving.
- Builders felt that a preprimed white overlay on all surfaces would be the most advantageous way to offer overlaid ponderosa pine shelving.
- They showed even more interest in the prefinished product--preferably white or off-white paint.
 - . These colors are the most popular, although in some cases stain would be required.
 - . The product must be adaptable to some finishing variations enabling it to compete for a broader market.

Maintenance

Builders Believe the Overlay Should Be Applied to Both Sides of the Shelf Material to Achieve Greater Product Stability

- Single-family builders generally are not too concerned about the maintenance of the shelving.
 - . The shelving should not warp excessively.
- Apartment builders are typically more interested in the maintenance of shelving.
 - . This is particularly true if the builder is also the owner.
 - . Owners are concerned with replacement of shelving if it warps excessively, and periodical repainting, etc.
 - . Performance of #2 and #3 Common pine, however, appears to meet their requirements at the present time.
- If the overlay yields a longer finish life than traditional materials, it will constitute an advantage for the product.
 - . This applies especially to the garden apartment market where appearance life and frequency of refinishing is a consideration for the builder/owner.
- Builders are concerned that overlaying the ponderosa pine product on one side only will cause excessive cupping and core warpage.
 - . The underside of the shelf should be either back-primed or finished which would give a better appearance and lessen the possibility of warping.
 - . Builders believe that the overlay on both sides of the shelf would balance the stress and reduce cupping.

3 - MARKETING GUIDELINES

The Following Guidelines Present Preliminary Market Requirements for Overlaid Ponderosa Pine Shelving

- Since this is a screening study, only general marketing requirements can be presented.
- In essence, these guidelines present an estimate of what will be required if a substantial sales volume is to be developed.

3.1 Product Line

Offer Shelf Board in 10- and 16-Foot Lengths

- The ability to produce long lengths was seen as a distinct advantage for the overlaid concept.
 - . Both 10-foot and 16-foot lengths are generally considered advantageous because of the usable multiple sizes they yield.

Offer Widths of 6, 8, and 12 Inches and Possibly 24 Inches

- Most lumber shelving is bought in 12-inch widths and most of it is used in that width.
- Other widths of 4, 6 and 8 inches are frequently used, but most commonly in combinations with each other or with 12-inch material.
 - . The rate of use and frequency of combinations could not be determined from this study.
 - . Examination of multiples suggests that 6-, 8- and 12-inch combinations would be adequate to provide additional variations of 14, 16, 18, 20 and 24 inches.

- An edge-glued ponderosa pine shelf board in a 24-inch width could offer definite advantages over plywood and particleboard.
 - . If the overlaid pine is to compete in these wide widths it must meet the performance standards and be priced equal to or below plywood.

Shelf Board Should Be Sold Preprimed

- In lieu of being able to use a white (or off-white) overlay, it would be necessary to prime the face and back of the shelving.
 - . The primer should be white or off-white.
- The basic reason for priming is to enhance the appearance of the shelving because builders objected to the "bluish" color of the overlay.
- Mill priming will not necessarily represent a saving to the builder.
 - . Painting contractors reportedly will seldom reduce the finishing price to reflect the saving resulting from the builder using primed shelving.
 - . Builders indicated, however, that it may not be necessary to apply a finish coat, depending on the appearance of the primer.

3.2 Pricing

The Overlaid Product Must Be Within 10% to 15% of #2 Common Pine

- The overlaid shelf is recognized as being definitely superior, but not to the extent that builders would pay a higher premium.

Mill Prices May Have To Be 15% to 25% Below #2 Common Because of the
Need to Sell Overlaid Pine Through Stocking Distributors

- Lumber shelving is being sold direct from mill to lumber dealers.
 - . Stocking distributors are not a major factor in the channels of distribution.
- Because the overlaid shelving is a specialty product, dealers will rely on the distributor to stock.
 - . Therefore, there will be an extra markup built into the overlaid shelving.
 - . Distributors would likely mark up the product 20% to 25%.
- In order to compete with lumber shelving at dealer level, the mill price must be lower so that after the dealer and distributor have added their markups, the builders will not be paying more than a 10% to 15% premium over #2 Common pine.

3.3 Distribution

Sell Through Stocking Distributors

- The overlaid shelf product poses two situations which affect distribution decisions.
 - . The product is a specialty--not a commodity.
 - . On the average, retail lumber dealers sell only about 4,000 board feet of shelving annually per dealer.
- A specialty product of limited volume faces serious problems in achieving proper distribution and support at the retail dealer level.

- Selling the product through stocking distributors would have several advantages.
 - . While sales through individual dealers would be too small to warrant much dealer interest, the accumulated volume concentrated at the wholesale level could be substantial enough to justify a stronger selling and merchandising effort by the distributor.
 - . A distributor could sell direct to volume apartment builders as well as through retail dealers.
 - . By selling direct, the product would benefit from lower distribution costs (lower markups through channels) and more effective promotional interest. Product movement would be largely independent of dealer support.
- A stocking distributor would be in a position to adequately service both builder and dealer.
 - . The right distributor could offer the builder a broad product package, local availability and the necessary service.
 - . A distributor providing local inventory to retail dealers would solve many distribution problems for those who might be persuaded to offer the line.

3.4 Selling

Plan on an Intense Sales and Promotional Effort to Generate Interest and Demand

- The overlaid shelf is a new product. It will require distribution and selling techniques considerably different from those currently used to sell shelving.

- In this industry the cost of innovation is high.

- . Promotional literature, trade advertising, product samples and personal selling will all be required to develop sales.
- . This level of support will, in all likelihood, not be necessary as a sustained effort. It is a necessary initial cost which should persist until market penetration reaches a level which indicates eventual acceptance of the product on a broad scale.

SECTION IV

PRODUCT EVALUATION OF OTHER OVERLAID PONDEROSA PINE PRODUCTS

- A. Fascia
- B. Jambs
- C. Interior Decorative Paneling
- D. Outdoor Stadium Seats

This section presents a discussion on each of the four products that were dropped from further evaluation at the completion of the first phase of the study. Product requirements, as well as other marketing considerations, are presented.

A. FASCIA

1. Summary

There Are No Distinct Product Advantages That Would Motivate the Builder to Purchase Overlaid Ponderosa Pine Fascia

- Some concept advantages are inherent in the overlaid product; for example, long lengths and a smooth surface. However, neither of these advantages are sufficient in themselves to command a premium price.
 - . Both features are currently available in higher-priced lumber, but few builders are willing to pay the required premium.
- The sole opportunity would seem to be to offer an overlaid fascia product at a cost lower than products presently available.
 - . This is unlikely, based on technical developments indicated to date.

The TRUE Potential for Overlaid Ponderosa Pine Fascia Is Extremely Limited

- While total potential is estimated at 70 to 80 million board feet annually, the TRUE potential for overlaid ponderosa pine fascia is only 30 to 40 million board feet.
 - . This represents a market of only \$3 to \$4 million annually at mill level.
- Of the total potential, about 50% of the fascia has a smooth surface and will finally be painted.

- Rough-sawn, natural-finish and aluminum fascia represents the balance of the potential.
- Potential in the single-family market is about 60 to 70 million board feet.
- Rough estimates place the apartment fascia potential at about 5 to 7 million board feet.
- It is estimated that there is an additional 5 to 10 million board feet used in new construction of free-standing garages, plus some repair & remodeling work.

Overlaid Ponderosa Pine Fascia Would Compete Primarily With #2 Common Ponderosa Pine and White Pine

- Some lower-priced species and grades of lumber are utilized and occasionally #1 Common pine.
 - . Both spruce and #3 Common pine are used, but infrequently.
- Since the overlaid product cannot be textured to simulate a rough-sawn effect, it will not compete with cedar and redwood fascia which, in most cases, are used rough sawn or stained to give a special rustic effect.
- Aluminum fascia is receiving broad usage and enjoys the distinct feature of being maintenance free.
 - . Because of this feature, it is highly doubtful that overlaid ponderosa pine could compete with aluminum.

#2 Common Ponderosa Pine and White Pine Sell at Builder Level for About \$190 to \$200 Per Thousand Board Feet

- The trade claims that perhaps an overlaid ponderosa pine fascia product could compete at the upper end of the price range, but no premium is warranted over prevailing prices.

EXHIBIT VIII

TYPE OF FASCIA PRODUCTS BEING USED

<u>Product</u>	<u>Grade</u>	<u>Size</u>		
		<u>Thickness</u>	<u>Width</u>	<u>Length</u>
Pine				
Ponderosa Idaho White	#2 and #3 Common	3/4"; 1"; 1 1/4"	4"; 6"; 8"; 10"	R/L*
Redwood	A, B or Btr. All-Heart Finger-Jointed	1"; 1-5/8"; 2"	4"; 6"; 8"; 10"	R/L*
Cedar	Clear-Heart Finger-Jointed	1"; 1-5/8"	4"; 6"; 8"; 10"	R/L*
Aluminum	-	.024 gauge	4"; 6"; 8"; 10"	12'
Hardboard	-	7/16"	4"; 6"; 8"; 10"	16'

**Random Lengths*

Source: SK&A 1968

- Materials commonly used for fascia are shown in Exhibit VIII.
- About 25% of all fascia is rabbetted (plowed) for installation with 1/4" and 3/8" soffit material.
- Preprimed fascia is available, but generally the fascia is primed and finished on the job site.

2. Product Requirements

- Exhibit IX shows the relative importance of various end-use criteria for a fascia board and gives a comparative rating of the overlaid ponderosa pine concept.

Function

The Evaluation of Overlaid Ponderosa Pine Fascia Depends Largely Upon the Quality of the Core Lumber Used

- There are two basic functions of fascia.
 - . Support a soffit system
 - . Tie up rafter tails
- Support of a soffit system implies a degree of structural strength and the need for rabbetting to accommodate 1/4" and 3/8" soffit material.
- To brace rafter tails, the fascia must permit face nailing and offer good nail-holding power.
- The trade expressed doubts as to whether a low-grade core material would meet these requirements.
 - . Face nailing poses particular problems.
 - . Builders were frequently concerned that nailing into (or near) hidden knots or defects would push knots out and cause surface distortion and/or break the overlay.

EXHIBIT IX

STANDARD END-USE CRITERIA FOR EVALUATING
FASCIA PRODUCT

<u>Standard End-Use Criteria</u>	<u>Very Imp.</u>	<u>Imp.</u>	<u>Marg'l Imp.</u>	<u>Not Imp.</u>	<u>Comparative Rating of Overlaid Ponderosa Pine</u>
<u>Function</u>					
Structural trim	X				?
Tie up rafter tails	X				?
<u>Installation</u>					
Workability	X				-
Susceptibility to damage	X				?
Long lengths		X			+
<u>Maintenance</u>					
Material life	X				? (-)
Finish Life		X			=
<u>Aesthetics</u>					
Surface characteristics		X			? (+)
Paintability	X				?
Thickness and width variations	X				=

Source: SK&A 1968

Installation

Builders Have Mixed Feelings Regarding the Installation Considerations of an Overlaid Fascia

- As indicated above, there are several possible complications stemming from nailing into a board with masked defects.
- Builders also anticipated that edge voids would develop if the low-grade core material was sawed or ripped.
- Characteristics of the product should not complicate sawing and nailing beyond what is now experienced with pine lumber.

On-Site Storage and Handling of the Product Raises Other Questions

- Fascia boards are normally stacked in the open prior to use.
 - . The trade questioned the overlay's resistance to rain and ground moisture if exposed in the open without protection.
- On-site handling when stacking and unpling lumber exposes a product to a certain amount of abuse.
 - . The overlay must be able to resist tearing and serious scuffing from normal handling abuse.

Builders Assume the Overlaid Product Concept Will Permit Standard 16-Foot Lengths

- This was considered to be an important advantage for the product, since long lengths offer easier and faster fitting and installation.
- Although long lengths are considered to be advantageous, concern was expressed that defects in core material of the overlaid product would cause weaknesses and subsequent breakage when long boards are being handled.

Maintenance

Overlaid Fascia Must Offer a Minimum of 15 Years of Relative Freedom From Warp, Rot and Delamination

- Fascia is similar to siding in the required life of product and finish.
 - . While the product itself is expected to have a long life, painted surfaces are expected to last a minimum of 4 to 5 years without peeling, blistering or uneven discoloration.
- Builders felt that with the overlay applied on one side only, cupping or warping would result from uneven stress and moisture absorption from the uncovered side.
- The trade anticipated that the overlaid product will accept conventional paints and painting methods.
 - . The overlaid product is therefore considered to be equal to lumber fascia.

Aesthetics

If Assurances Can Be Given That Core Defects Will Not Telegraph Through the Overlay, Builders Will React Favorably to the Appearance of the Overlaid Product

- The widely accepted standard for surface characteristics is #2 ponderosa pine which allows for tight knots and minimum grain raise but no bleeding of pitch.
 - . Anything below this accepted standard would not be tolerated by the trade.

- Some concern was expressed that defects would telegraph badly after installation.
 - . If this presents no problem, than the smooth surface of the overlay would offer a superior face.
- The overlaid product must provide a base for paint equally as good as ponderosa pine lumber.
 - . The trade believes the overlay would provide a satisfactory finish with one primer and one finish coat of conventional house paint.
- Variations of thicknesses and widths of fascia used to produce aesthetic differences are required.
 - . Minimum shadowline thickness requirement is 3/4".
 - . Necessary width variations are 4, 6, 8 and 10 inches.
- The trade assumed that overlaid ponderosa pine would be available in the required sizes.

B. JAMBS

1. Summary

The Overlaid Ponderosa Pine Jamb Concept Appears to Have Several Serious Deficiencies

- The reaction to overlaid ponderosa pine jambs is negative. The trade is concerned with the product's strength, the screw-holding power and racking strength of low-grade core material, plus its workability and finishing characteristics.
 - . The total product concept, as viewed by the trade, cannot perform as required.

The Estimated Potential for Overlaid Ponderosa Pine Jambs Is Quite Small

- The total jamb market potential is estimated at \$60 to \$70 million at builder level.
- This estimate has been developed as follows:
 - . On the average, there are 15 jamb sets per single-family dwelling and 7 per apartment unit.
 - . Based on 1967 housing starts the total number of jambs would be about 16 million sets (\$64 million at builder level).
- Reliable trade sources report that pre-hung door units account for 50% to 55% of the total market (\$30 to \$35 million).
 - . Total on-site jamb installations account for the remainder of the market (about \$30 million).
- About 66% of the on-site installations is interior doors which represent only \$12 to \$14 million at mill level.

Many Builders Contacted Purchase Their Jambs as Part of Their Pre-Hung Door Units

- The pre-hung door presently represents about 50% of the total door market and is increasing.
 - . In the new residential construction market pre-hung interior doors are probably a greater proportion than for the total market.
- The builder all too often could not speak with authority regarding the acceptability of a door jamb material for his interior door use.
 - . The builder did not know if his supplier of pre-hung doors would consider the overlaid jamb to be a satisfactory product.
 - . Further study of jambs must therefore include manufacturers and installers of pre-hung door units.
- The major proportion of doors hung on the job site are exterior doors.
 - . Jambs for exterior doors invariably require a water preservative treatment.
- There are other uses for door jambs: They are occasionally used for fixed-sash windows.
 - . However, these are also exterior uses and require the same preservative treatment.

Overlaid Ponderosa Pine Jambs Will Compete Primarily With Ponderosa Pine and White Pine

- Douglas fir and some redwood lumber is used on the West Coast and a small amount of hardwood material (mahogany and oak) is used but very infrequently.

EXHIBIT X

STANDARD END-USE CRITERIA FOR EVALUATING A JAMB PRODUCT

<u>Standard End-Use Criteria</u>	<u>Very Imp.</u>	<u>Imp.</u>	<u>Marg'l Imp.</u>	<u>Not Imp.</u>	<u>Comparative Rating of Overlaid Ponderosa Pine</u>
<u>Function</u>					
Door and latch support	X				?
Screw-holding power	X				=
<u>Installation</u>					
Workability	X				?
Fitting and trimming	X				?
<u>Aesthetics</u>					
Surface characteristics	X				?(+)
Finishing	X				-
Paintability	X				?
<u>Maintenance</u>					
Product stability	X				?
Damage resistance		X			?

Source: SK&A 1968

The Trade Will Not Downgrade the Quality of Jamb for Price Advantage

- It appears that quality of jamb material is of major importance and the builder cannot justify a reduction in material cost at the expense of jamb quality.
 - . Defective lumber can lead to higher labor cost in installation and problems after installation.
- Jambs are priced per set or per jamb side. Ponderosa pine sets of 2'8" x 6'8" cost about \$3.50 to \$4.50 at builder level, including dado cuts.

2. Product Requirement

- Exhibit X shows the relative importance of various end-use criteria for jambs and gives a comparative rating for the overlaid ponderosa pine product concept.

Function

The Trade Questions the Ability of Low-Grade Core Material in the Overlaid Product to Perform the Primary Function of a Jamb---a Door and Latch Support

- The minimum jamb thickness of 3/4" is needed to provide sufficient rigidity and racking strength and to accommodate the depth of lock strike (3/4").
 - . It was felt that the low-grade core may not offer sufficient strength to perform this task efficiently.
- Good screw-holding power is critical to keep hinges and lock strike firmly in place.
 - . Ponderosa pine is an accepted standard for jamb material and the trade assumes that the overlaid product would meet this standard in spite of the low-grade material.

Installation

Overlaid Ponderosa Pine Jambs Must Allow for Considerable Cutting During Installation

- Jambs are ripped to fit thin walls, planed for flush alignment and sanded.
- Because of the need to countersink door hinges and lock strikes, a jamb must allow easy notching.
 - . Notching may be made considerably more difficult because of possible defects hidden by the overlay.
- Builders are concerned that edge knots may leave voids when the jamb is ripped to fit thin walls.
- The trade fears that the overlay will peel back from exposed cuts in the doorway and that planing and sanding of the edges will adversely affect the overlay.

Aesthetics

If Core Defects Do Not Telegraph, the Overlaid Product Would Offer Superior Surface Characteristics

- A smooth surface with no visible defects is sought by builders.
 - . Finger-jointed material is not widely accepted for jambs.
- Builders recognized that the overlaid product could be used only when it is to be painted. Therefore, it could not be stained to match a natural-finish door.
 - . It is estimated that one in four doors are stained.
- It is important that the overlay take conventional paints successfully if it is to be accepted by the trade.

Maintenance

Overlaid Ponderosa Pine Must Be Completely Stable If It Is to Perform Satisfactorily as a Jamb

- Good jamb racking strength is critical.
- Builders will need assurance that the overlaid jamb will not cup or warp.
 - . No warping or cupping can be tolerated because of the possible effect on door closure.
- Exterior jambs must be treated for protection against moisture prior to installation.

Builders Reserve Judgement on the Ability of the Overlaid Product to Resist Damage as the Durability of the Overlay Is an Unknown Factor

- A doorway is a "high-traffic" area and, therefore, the jambs are subject to abuse (abrasion, impact, etc.).
- Jambs and stops must be capable of tolerating this type of damage and be easily refinished or repaired.

C. INTERIOR DECORATIVE PANELING

1. Summary

The Trade Reaction to Overlaid Ponderosa Pine Lumber Paneling Was Too Negative to Justify Further Consideration

- The cost of the overlaid product would place it in the same category with paneling which it could not effectively compete against.
 - . It is expected that the proposed product would cost at least 35 to 40 cents per square foot at retail level.
 - . At this price level the overlaid product would be competing with real hardwood plywood paneling.

The Potential Is Severely Limited

- Best estimates indicate that prefinished paneling, priced at 30 cents and over, represents less than 100 million square feet in a market of approximately 2-1/2 billion square feet annually.
- The greater volume of prefinished paneling retails in the range of 12 to 30 cents per square foot.
 - . Products represented in the volume price range (12 to 30 cents) are lauans, grain-printed hardboard and hardwood veneers on plywood and hardboard cores.

Overlaid Lumber Is Not Authentic and Therefore Is Unacceptable As a High-Priced Paneling

- Customers desire a genuine hardwood veneer or authentic lumber paneling when they spend 30 cents or more per square foot.

- . This type of consumer and builder rejects grain-printed and other imitation paneling products.
- . The proposed ponderosa pine paneling is considered in the "imitation" category, and might be acceptable if it was to be sold at retail for less than 20 cents per square foot.
- Paneling which sells at the higher price levels consists of 1/4" prefinished genuine hardwood veneer plywood; stock 1/4" and 3/4" unfinished hardwood veneer plywood; custom architectural 1/4" and 3/4" hardwood plywood, book-matched and sequence numbered; and true, wood lumber paneling, both softwood and hardwood.
- . Prices for items in these categories vary widely depending on species, quality of veneer, size of flitch and type of finish.

Installation of Overlaid Ponderosa Pine Lumber Paneling Is Considered Too Different

- It is estimated that 80% to 90% of prefinished paneling is purchased by the do-it-yourself customer.
- Dealers feel that the do-it-yourself buyer would consider the overlaid paneling much more complicated to install than plywood panels.
 - . The do-it-yourself customer demands simplicity and speed of installation.
 - . To a large extent, even builders prefer the simplicity of large panel application because it is cheaper and faster to install.

Dealers Would Not Promote the New Paneling Product

- Retail dealers do not "sell" paneling--the product "must sell itself."

- . A paneling product which is priced right will sell more easily.
- . Higher-priced panels require considerably more floor-selling effort. The dealer feels that cultivating the market for such a product is a manufacturers responsibility.
- The dealers, therefore, expect the manufacturer of the over-laid product to "presell" the product to their customers.

Prefinished Lauan Is the Largest-Selling Paneling Item

- This varies considerably with the location and customer composition of the individual lumberyard.
- The builder price for prefinished lauan varies from 11 cents to nearly 20 cents per square foot.
 - . The most common price seems to be about 14 or 15 cents.
- Lauan paneling is frequently used as a "loss leader" and traffic builder for consumer business.
 - . Lauan is the primary decorative plywood paneling item which sells for less than 20 cents per square foot.
 - . Some Lauan is selling at retail for as low as 8-1/2 cents per square foot.
- The retail price for 1/4" hardboard paneling ranges from 20 to 30 cents per square foot.
 - . However, the volume builder generally buys this paneling at about 23 or 24 cents per square foot.

Market Trends Which Are Now Developing Do Not Favor Overlaid
Ponderosa Pine Paneling

- The average price of paneling is steadily going downward while volume is increasing.
- There is a trend in the lumber paneling products toward rough-sawn, vertical and genuine, aged paneling.
- Manufacturers are recognizing that there is some market for lumber-type paneling and because of this, low-cost, simulated lumber hardboard paneling in 4'x 8' sheets is being developed.

2. Product Requirements

The trade's attitude was so negative with respect to the overlaid paneling, that the development of Product Requirements was not warranted.

D. OUTDOOR STADIUM SEATS

1. Summary

Outdoor Stadium Seating Is Used in Two Distinct Types of Structures

- "Bleachers" and "grandstands" are the two most common distinctions.
- Bleachers are normally thought of as movable and consisting of steel or wood scaffolding with wood seats and foot boards.
 - . School athletic fields and little league parks generally use bleachers.
 - . Bleachers represent perhaps the major share of total seating potential.
- Grandstands are typically fixed and may vary greatly in spectator capacity, design and structural materials.
 - . The simpler form is similar to bleachers, except that they are permanent.
 - . More elaborate designs have a full decking (rather than just foot boards) and the decking is normally steel or concrete.
 - . Bowl-type arenas are included in the grandstand category.
- Both single-board and slat-type stadium seating is used for bleachers.

The Overlaid Ponderosa Pine Seating Would Not Be Acceptable Because It Will Not Meet Code Requirements

- Ponderosa pine does not have the working stresses required by the building codes. (See Product Requirement Section.)

The Trade Also Anticipates the Overlay Will Pose Severe End-Use Problems

- It may warp and/or cup excessively.
- It may create maintenance problems.

The Market Potential for Stadium Seating Is Too Small To Be Attractive

- The total volume of lumber stadium seating used for both new construction and seat replacement is estimated to be only 23 to 30 million board feet annually.
 - . There is no published data available to confirm these estimates, but one manufacturer did corroborate them.

Douglas Fir and Yellow Pine Are Strongly Entrenched in the Stadium Seating Market

- These two species account for 85% of the market.
 - . The remaining 15% of the volume is represented by redwood, fiber glass, aluminum and concrete.
 - . Redwood, which accounts for about 10% of the market has a higher installed cost, but offers the stadium owner maintenance savings.

- . Fiber glass, aluminum and concrete, which account for the remaining 5%, have difficulty competing in this market because lumber is more suitable in the opinion of the spectator.
 - . Wood has thermal characteristics which have not been developed satisfactorily in substitute materials. Wood is not uncomfortable to the touch in cold weather, nor will it become excessively hot under the summer sun.
- Douglas fir and yellow pine have several major advantages.
 - . They meet building code requirements.
 - . They are lower in cost than other seating materials.
 - . These species are readily available; this is considered to be a very important factor in the purchasing decision.
 - The trade indicates that they are not completely satisfied with these two species.
 - . Douglas fir and yellow pine normally require treatment and painting (before or after installation) to prevent decay.
 - . Despite treatment, stadium owners must still replace a high percentage of the seats because of decay.
 - Other problems with wood stadium seats are splinters and pitch bleeding.
 - For the most part, wood stadium seating used today is manufactured from 8/4 lumber.
 - . The primary widths of 8/4 lumber are 10 and 12 inches.

- Single-board and slat-type seats are used in the following dimensions:

Nominal thickness: 2"

Widths:

Single board	10" and 12"
Slat type	4" and 6"

Lengths: 12', 14', 16', 18' and 20'

- Douglas fir and yellow pine, in the desired grades and dimensions, range from \$160 to \$180 per thousand board feet at the mill.

- . Compared to this, D & Btr ponderosa pine would be \$200 to \$220 at the mill level, while C & Btr would be around \$300 per thousand board feet.

- Douglas fir and yellow pine stadium seat prices, to the end user, range from \$280 to \$300 per thousand board feet FOB the seating-board plant.

- . This price includes preservation treatment, painting and some machining.
- . Untreated but painted and machined redwood is priced from \$320 to \$340 per thousand board feet.

- Pricing is normally on a negotiated basis and reportedly very competitive.

- . Seating manufacturers reported that 5% is a typical markup on seating boards.

- It is possible that the proposed product would require preservative treatment even though overlaid.

- . The treatment costs about \$65 per thousand board feet.

EXHIBIT XI

STANDARD END-USE CRITERIA FOR EVALUATING OUTDOOR STADIUM SEATS

<u>Standard End-Use Criteria</u>	<u>Very Imp.</u>	<u>Imp.</u>	<u>Marg'l Imp.</u>	<u>Not Imp.</u>	<u>Comparative Rating of Overlaid Ponderosa Pine</u>
<u>Function</u>					
Safe seating	X				-
Comfortable seating	X				?
<u>Installation</u>					
System	X				?
Finishing		X			=
<u>Aesthetics</u>			X		=
<u>Maintenance</u>					
Repainting	X				+
Replacement	X				?
Inspection	X				-

Source: SK&A 1968

2. Product Requirements

- Exhibit XI shows the relative importance of various end-use criteria for outdoor stadium seats and gives a comparative rating for the overlaid ponderosa pine product concept.

Functions

City Code Officials, Architects and Manufacturers Stated That Ponderosa Pine, as a Species, Is Not Structurally Suited for Most Bleacher and/or Stadium Designs

- Safe seating is a major consideration in outdoor stadium seats.
- Safe seating is regulated by codes on outdoor and/or public assembly.
- The cities of Chicago, Dallas and Los Angeles have codes covering bleachers and grandstands which require that these seats support a live load of 100 lbs. per square foot.
 - . The Uniform Building Code requires seats to support a live load of 100 lbs. per square foot, or 120 lbs. per lineal foot.
- Manufacturers and the Chicago Building Department stated that these live-load requirements could only be satisfied by wood species having extreme fiber stress of 1,750 lbs. or more per square inch.
 - . These working stresses are based on a 6-foot span with a nominal 2" thick board.
 - . Trade and code officials interviewed strongly doubted that ponderosa pine could achieve the live load code requirements.
- Spans for bleachers are mostly 6 feet, although some are 5 feet. Ponderosa pine could not be used for this type of seating according to manufacturers and specifiers.

- Spans for stadiums range from 4 to 6 feet, with 6 feet being normal.
 - . It is possible that ponderosa pine could qualify if 4-foot spans are used, but it would have to be authorized specifically for the project by a building inspector.
- The cities of Chicago, Dallas and Los Angeles reported that all architectural plans are checked before permission is given to use a particular type of seating.
 - . All the major manufacturers reported that the requirements are so strict that they would under no circumstances use a species which could not qualify in terms of the Uniform Building Code requirements.
- The ponderosa pine product could be used if the working stresses are increased through either the use of thicker lumber, smaller spans or if the lamination of the overlay changed the working stress characteristics of the product.
 - . The two first alternatives were expected to increase the cost of seating and/or stadiums as a whole and were reported by the trade as impractical.
 - . The third alternative does not provide an answer either, since the fiber overlay can be cut or otherwise damaged during use, thus eliminating any strength advantages which may have existed in the product when new.

The Overlaid Stadium Seat Causes Mixed Reactions With Regard to Seat Comfort

- There is, reportedly, not much opportunity to work with the board-type seats in terms of comfort.
 - . The edges should be eased and corners well rounded.
 - . Reportedly, the users prefer the single-board to the slat-type seats for comfort.

- . Comfort in the seating is partially contributed to by the bleacher design.
- Where surface characteristics are a concern, the overlays should perform well.
- Seats should provide drainage so that they dry fast after a rain.
 - . Normal design of a 4-degree angle off the horizontal is common practice.
 - . Cupping or warping to offset the angle is highly undesirable.
- If the overlaid ponderosa pine tends to cup or warp more than competitive species, the product would be at a strong disadvantage.
- Seats manufactured from materials such as metals, concrete and fiber glass are reportedly undesirable.
 - . Spectators sitting on these seats are uncomfortably cold in the winter and can be burned during the summer.
 - . The thermal characteristics of wood are reported as a major reason why a suitable substitute has not been found.
- The trade assumes that the overlay will have no effect on the characteristics of wood and would therefore be acceptable.
- Nearly defect-free surface in the seating is required to eliminate areas where pitch can bleed through to the surface.
 - . Douglas fir is normally preferred over yellow pine because it has a lower resin content.
- The overlay would probably obviate most problems with pitch.

Installation

The Trade Assumes That the System of Installing the Overlaid Ponderosa Pine Would Be the Same as for Competing Species

- The mechanics of putting the seating in place is basically the same for all wood products that are now used.
 - . Fixed seating is carefully bolted to supports.
 - . Removable seating, such as bleachers, is normally clamp or slide fastened.
- If overlaid ponderosa pine requires a smaller span than normal, or if it were to require use of a thicker lumber to achieve greater working stresses, then costs of installation, additional supports and fasteners and design would all increase.
- Douglas fir or yellow pine are normally pre-painted while redwood need not be painted.
- The trade believes the overlay would offer a surface that is as easy (or easier) to finish than wood.

Aesthetics

The Appearance Considerations of the Overlay Have Little Effect on Trade Reaction to the Product

- The overall appearance of the stadium and/or bleacher is regarded by owners as important but only marginal importance is attached to the appearance of the seating itself.
 - . The consideration is primarily with a neat and clean-looking physical plant.
 - . The aesthetic requirement is therefore essentially a janitorial (maintenance) concern.

- Carving, cutting and other normal wear and tear of wood is fully acceptable from an aesthetic point of view.
- . The trade indicated that carvings in the overlay may be more displeasing in appearance than those in wood.

Maintenance

The Overlaid Ponderosa Pine Offers Both Advantages and Disadvantages With Regard to Maintenance Considerations

- Maintenance of the seating is one of the most important considerations because it represents a high recurring cost.
- The seating is normally repainted every two years.
 - . The overlay is expected to provide a better painting surface.
- Seats which are becoming structurally unsound, or otherwise deteriorated so that they affect comfort, must be replaced.
 - . The rate of replacement was reported to be approximately 5% of the seating annually.
- Stadium seats are inspected at regular intervals to detect deterioration before accidents can happen.
 - . Universities regard inspection as a costly part of the regular maintenance program on physical plants.
 - . The City of Chicago inspects bleachers at professional ballparks at the opening of each season.
- There is strong concern that overlaid ponderosa pine could increase the replacement rate because of excessive warping or faster deterioration.
- If the overlay obviates the problem with slivers, it would reduce the frequency of replacing damaged boards.

- The overlay will serve to hide decay and other defects in the wood which develops during use and exposure.
- The trade fears that if the overlays hide defects, the problem of making routine inspections would be complicated.
 - . If the core was deteriorating or other structural weaknesses were developing, it could not be determined by a visual inspection.
 - . An accident might, therefore, occur even though a visual inspection had been made.

INTERVIEW GUIDELINE

Product: _____

Name of Firm _____ Date _____

Address _____ Interviewer _____

Name of Person Interviewed _____ Transcribed
(Date) _____

Responsibility _____ Transcribed
By _____

PROFILE

No. of homes built in 1966 _____

Price class range of homes _____

Average floor area of homes _____

Dealer volume _____

1.0 PRODUCT DESCRIPTION

1.1 Types (species) used/sold

1.2 Sizes (including lengths)

1.3 Grades

1.4 Special treatments
(priming, prefinish, water preservatives, etc.)

1.5 Patterns/styles most common

2.0 END USES

2.1 Where used

- Type of construction
- Where on (in) structure

2.2 Customer type

3.0 PERFORMANCE REQUIREMENTS

3.1 How specified

3.2 Standard Criteria

- 3.2.1 Function
- 3.2.2 Installation
- 3.2.3 Aesthetics
- 3.2.4 Design flexibility
- 3.2.5 Upkeep (maintenance)
- 3.2.6 Service (call-back)
- 3.2.7 Promotability
- 3.2.8 Cost considerations
- 3.2.9 Universal appeal
- 3.2.10 Brand

3.3 Guarantees

4.0 COMPETITION

4.1 Major competition

4.2 Advantages

4.3 Disadvantages

5.0 EVALUATION OF PP OVERLAY

5.1 Overall reaction

5.2 Performance against criteria

- Major advantages (features)
- Major disadvantages (problems)

5.3 Code considerations

5.4 Price perception

5.5 Target market

6.0 POTENTIAL

6.1 Volume x type per average house (Bd. ft; sq. ft.; lineal ft.)

7.0 TRENDS

7.1 Trend in volume usage

- Past
- Future

7.2 Trend in material type

- Past
- Future

8.0 PRICING

8.1 Purchase price

- Builder level
- Dealer level

8.2 Price inclusions/variatioins

8.3 Special discounts

8.4 Freight prepaid

9.0 SUPPLIERS

9.1 Type

9.2 Number

9.3 Supplier selection/switching

10.0 ORDERS

10.1 Quantity (CL, LCL, TL)

10.2 Frequency

10.3 Mix package

10.4 Lead time

11.0 SERVICES

11.1 Delivery

11.2 Scheduling

11.3 Take-offs

12.0 METHODS OF SELLING

12.1 Promotions

12.2 Type

12.3 Effectiveness

12.4 Other sales aids

MANUFACTURERS INTERVIEW GUIDELINE

Product: _____

Name of Firm _____ Date _____

Address _____ Interviewer _____

Name of Person Interviewed _____ Transcribed
(Date) _____

Responsibility _____ Transcribed
By _____

PRODUCT DEFINITION

(Describe & Discuss)

6.0 POTENTIAL

6.1 Estimated size of market

6.2 Available data

- By end use
- By region

6.3 % prefinished/treated, etc.

7.0 TRENDS

7.1 Industry sales increasing/decreasing

- Why

7.2 Other market trends

4.0 COMPETITION

4.1 Major competition

4.2 Advantages

4.3 Disadvantages

4.4 Major producers

9.0 DISTRIBUTION

9.1 Channels

- % through channels

9.3 Distribution changes

- Why

8.0 PRICING

8.1 Purchase price

- Builder level
- Dealer level
- Distributor level

8.2 Price inclusions/variations

8.3 Special discounts

8.4 Freight prepaid

8.5 Mill prices for volume items

8.6 Copy of price schedule

10.0 ORDERS

10.1 Quantity (CL, LCL, TL)

10.2 Frequency

10.3 Mix package

10.4 Lead time

10.5 Mixed car shipments

- % of total

12.0 METHODS OF SELLING

- 12.1 Promotions
- 12.2 Type
- 12.3 Effectiveness
- 12.4 Other sales aids
- 12.5 Samples of promotional material

14.0 SALES ORGANIZATION

- 14.1 Type of organization
 - Same as competitors?
- 14.2 Other products sold
- 14.3 Sales volume per man

15.0 RESEARCH & DEVELOPMENT (R&D)

- 15.1 Interest in new products of this type
 - Overlaid
 - Other
- 15.2 Experience
- 15.3 Plans for future
- 15.4 Anticipated marketing pitfalls
 - Reasons

17.0 MARKETING RECOMMENDATIONS

- 17.1 Specifications
- 17.2 Product line
- 17.3 Pricing
- 17.4 Distribution
- 17.5 Selling effort
- 17.6 Merchandising
- 17.7 Services